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OBSERVATIONS AND INVESTIGATIONS

MADE AT THE

BLUE HILL METEOROLOGICAL OBSERVATORY,

MASSACHUSETTS, U. S. A.,

UNDER THE DIRECTION OF

A. LAWRENCE ROTCH.

THE ECLIPSE CYCLONE AND THE DIURNAL CYCLONES

BY

H. HELM CLAYTON.

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PREFACE.

THE results of the observations made at the Blue Hill Meteorological Observatory, under the direction of Mr. Rotch, have been printed in the Annals of this Observatory, together with the principal meteorological investigations made there. Mr. Rotch has published, at his own expense, a series of bulletins containing the results of special studies and investigations made at Blue Hill, also under his direction. It is considered that these latter publications have a permanent scientific value, and arrangements have therefore been made by which they will, in future, be published in the Annals. In general, the observations and special investigations will appear, in order of preparation, as consecutive parts of a volume.

EDWARD C. PICKERING,
Director of Harvard College Observatory.

CAMBRIDGE, U. S., *January 31, 1901.*

THE ECLIPSE CYCLONE AND THE DIURNAL CYCLONES.

BY H. HELM CLAYTON.

JANUARY, 1901.

THE ECLIPSE CYCLONE; RESULTS OF METEOROLOGICAL OBSERVATIONS DURING THE SOLAR ECLIPSE OF MAY 28, 1900.

The data at the Blue Hill Observatory, available for the study of the meteorological effects of the eclipse of May 28, 1900, though limited in amount, are excellent in quality, so far as the instrumental outfit of the observers would permit. The observations in the path of the total eclipse were all made by experts and trained observers, who went there primarily to see the eclipse phenomena, and, as a contribution to the science of the subject, took meteorological observations, with instruments provided by themselves. The meteorological records outside the path of the eclipse were chiefly obtained from well-equipped meteorological observatories, and are mainly from automatic instruments. The observations are given in Tables I. to IX.

The temperatures and humidities at Washington, Ga., were taken from an Assmann aspiration psychrometer. The temperatures and humidities at Wadesboro, N. C., were taken from a sling-psychrometer whirled in the shadow of the observer. The temperatures at Centerville, Va., were from a thermometer exposed in the shadow of a large camera. At Virginia Beach, Va., they were taken from a whirled thermometer. The temperatures at the meteorological observatories were from thermometers or thermographs exposed in standard shelters. The winds given for the various observatories and for Washington, Ga., were taken from self-recording instruments. At the other stations, the wind-directions were observed by means of light wind-vanes elevated a short distance above the ground.

The observations are plotted in Plate I. The broken double lines, in the centre of the chart, show the times of totality. The outer vertical lines show, approximately, the beginning and the ending of the eclipse. The times of the beginning and the ending of the eclipse and of totality at each station are given in the tables in the time of the 75th meridian west from Greenwich. These times were mostly derived from the charts in the American Ephemeris, and are sufficiently accurate for meteorological purposes. In Plate I. the line marked *Pressure* was plotted from the observations made

by Mr. Fergusson with a large aneroid at Washington, Ga. The barometer was rising, and the dotted line in this figure is drawn to represent a uniform rise of pressure from the beginning to the end of the eclipse. The lines marked *Temperature* are plotted from observations at the four stations already mentioned in the path of total eclipse. They all show a marked fall, reaching a minimum of temperature about ten minutes after the eclipse. The lines marked *Wind-Direction* are plotted from observations at three stations during the eclipse. In each case a maximum deflection to the right precedes totality, and a maximum deflection to the left follows totality. The lines marked *Wind-Velocity* are plotted from observations at three stations. They show in each case a maximum velocity preceding totality, a minimum immediately following totality, and a second maximum toward the end of the eclipse. The lines for Washington and Wadesboro are very similar. The wind at these stations was from W. S. W. during the morning of the eclipse, and the eclipse-shadow, or umbra, moved from the same direction. Hence, if the variations of velocity are related to the eclipse, it would mean that the wind blew outward from the umbra, increasing the velocity of the prevailing W. S. W. wind in advance of the shadow, and decreasing it in the rear. The maximum of velocity near the end of the eclipse would indicate an inrush of the outer air toward the edge of the penumbra or area of partial eclipse. The lines marked *Vapor-Tension* are plotted from observations at two stations. They each show a maximum of vapor-tension immediately following the total eclipse. The explanation probably is that vapor was rising from the soil. Preceding and following the eclipse this was carried off by ascending currents, but during the eclipse, when these ceased, there was an accumulation of vapor near the ground. The change of relative humidity is very similar to that of vapor-tension.

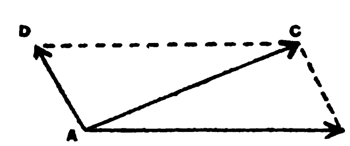
The lines representing the same phenomenon at different stations are similar to each other and show the usual changes observed during eclipses. In order to study quantitatively the influence of the eclipse on the atmosphere, it is necessary to separate, as well as one can, the effects of the eclipse from those due to other causes. There are at least three well-known phenomena, which may influence conditions in an eclipse. These are (1), the diurnal changes in the atmosphere; (2), the changes of condition attending the passage of cyclones and anticyclones; and (3), the brief, irregular fluctuations of a few minutes' or a few hours' duration, which are normal conditions in the atmosphere. The influence of (1) can be approximately eliminated from the observations by obtaining averages of any given element on days similar to that of the day of the eclipse, and subtracting them from the observations at the same hours on the day of the eclipse. Since (2) the changes of pressure, temperature, etc., attending cyclones and anticyclones are of long duration as compared with the duration of the eclipse, any change which may occur during the time of the eclipse may reasonably be assumed to be a uniform rise or fall; and corrections for it may be made by

interpolating a uniform change from the beginning to the end of the eclipse, and subtracting this from the observations. When the normal time of a diurnal maximum or minimum of any meteorological element is not included in the time covered by an eclipse, the diurnal change during the eclipse may be sufficiently well eliminated in this same way. The interpolated changes for Washington, Ga., are represented by the dotted lines in Plate I. To correct for (3), it is best to smooth the results by averaging successive observations.

At the stations in the path of the eclipse of May 28, 1900, no data were accessible for determining the normal diurnal periods; but as the eclipse occurred at a time of day that did not include the maximum or the minimum of any meteorological elements, the diurnal and the cyclonic changes were eliminated with sufficient accuracy from the changes due to the eclipse by interpolating a uniform change during the eclipse, as represented by the dotted lines in Plate I., and by subtracting this from the observations. At least in this way any changes which may be due to the eclipse become large in proportion to other residuals. It was thought best to treat the observations at all the stations in the same manner; and the residuals obtained in the way described are given in Tables I. to IX., in the columns immediately following the observations.

In the case of the winds, the observations plotted in Plate I. do not seem to show any marked changes between the beginning and the end of the eclipse due to diurnal or cyclonic changes; and it is deemed best to take the mean wind-direction and mean velocity during the eclipse as representing the prevailing wind at the time of the eclipse, and subtract these from the observations, in order to obtain the departures due to the eclipse. The residuals thus obtained are given in Tables I. to VIII., and do not differ greatly from those obtained by the interpolation method except near the beginning and the end of the eclipse. Here it is probable that the eclipse-wind is not zero, as it is necessary to assume in obtaining the residuals by the interpolation method. At Havana the diurnal variation of the wind is large; and, instead of the departures from the mean on the day of the eclipse, the departures from the normal mean for May, at each given time of day, are obtained. The normals were derived from the published reports of Belen College Observatory. In the columns in Tables I. to IX. headed *Wind-Direction*, the plus sign indicates a deflection to the right, and a minus sign a deflection to the left.

In order to obtain the velocity and direction of the eclipse-wind, the observations were treated in the following manner:—



In the accompanying diagram, let AB represent, in direction and velocity, the wind prevailing independent of the eclipse, and AC the wind observed at any moment during the eclipse; then, completing the

parallelogram of forces, AD will represent the eclipse-wind in direction and velocity. The prevailing wind was derived from the mean of the wind-directions immediately preceding and following the penumbra, or, what was found to be virtually the same thing, from the mean wind-direction during the passage of the penumbra, since the eclipse-wind blew from opposite directions during this passage. The mean wind and the eclipse-wind were at first determined graphically for all the stations, then as the results seemed to be of importance they were rigidly computed for all the stations where the observations were sufficiently accurate to warrant it. The mean wind-direction was computed by the formula,

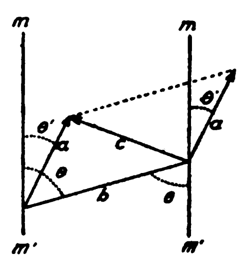
$$\text{Tan. } \theta = \frac{\Sigma(\sin o)v}{\Sigma(\cos o)v}$$

in which θ is the mean wind-direction, o is the observed wind-direction in degrees of azimuth, and v is the observed wind-velocity. In obtaining the sum of the sines and cosines, they are given the proper signs of the quadrants.

The mean velocity was obtained by the formula,

$$V = \sqrt{\left(\frac{\Sigma(\sin o)v}{n}\right)^2 + \left(\frac{\Sigma(\cos o)v}{n}\right)^2}$$

in which V is the mean velocity and n is the number of observations.



In the accompanying diagram,

let b = mean (or prevailing) wind-velocity
c = observed wind-velocity
a = eclipse wind-velocity
A, B, and C are angles opposite a, b, and c
A = angle of observed wind and mean wind
B = angle of observed wind and eclipse-wind
C = angle of eclipse-wind and mean wind
θ = direction of the mean (or prevailing) wind in degrees
θ' = direction of the eclipse-wind in degrees.

Then solving the triangle, abc,

$$\tan. \tfrac{1}{2}(B - C) = \frac{b - c}{b + c} \cot \tfrac{1}{2}A$$

$$\tfrac{1}{2}(B + C) = 90 - \tfrac{1}{2}A$$

$$C = \tfrac{1}{2}(B + C) - \tfrac{1}{2}(B - C)$$

$$a = \frac{(b - c)\cos \tfrac{1}{2}A}{\sin \tfrac{1}{2}(B - C)}$$

$\theta' = \theta \pm 180 \mp C$ (plus when o, the observed wind, is to the right of the mean wind; minus when o is to the left of the mean wind).

The eclipse winds were computed by these formulas for Washington, Ga., Wadesboro, N. C., and Blue Hill. For the other stations, the graphic solution was deemed sufficient, because the errors of plotting are much less than errors resulting from lack of sufficient detail in the observations.

This insufficiency of detail in the observations arose chiefly from the wind-directions being recorded to eight or sixteen points of the compass instead of in degrees. The small time-scale, used in recording the wind-velocity at one or two of the observatories, prevented great accuracy in determining the velocity. Thus at the New York Central Park Observatory the wind-directions were recorded with sufficient accuracy by a Draper anemoscope, but the wind-velocity for short intervals could not be determined with certainty on account of the small time-scale of the anemometer. Mr. Rotch was the only one of the observers within the path of totality who had self-recording instruments. His records are excellent for the study of the eclipse-wind during the time covered by them, except for a short time following totality when the anemometer cups ceased to turn on account of the light wind, and an estimate of velocity was made. At Wadesboro, N. C., the wind-directions were taken from a light vane about thirty feet above the ground; and the velocities were measured with a very delicate hand-anemometer. Mr. Pickard, at Virginia Beach, Va., observed the wind-direction in degrees, but he was without an anemometer, and had to depend on estimates of the velocity. These estimates were not sufficiently accurate for a detailed study of the changes in the eclipse-wind; but, the changes in direction and velocity indicate very clearly an outflow of wind from the shadow. Mr. Cole observed the wind-direction at Centerville, Va., but obtained no velocities. Outside of the path of totality, the most detailed observations were obtained at the Blue Hill Meteorological Observatory, where a Draper anemoscope gave wind-directions which could be read to degrees of azimuth, and a Richard anemo-cinemograph gave velocities which could be read to tenths of a mile. At the Ithaca and the Toronto Observatories, the wind-velocity was recorded by dots and dashes on a fairly large time-scale and could be read with sufficient accuracy; but the wind-direction was recorded to only eight points of the compass. At Ithaca, where the general wind was light, the eclipse-wind was able to assert itself, and could be determined with a fair degree of accuracy. But at Toronto, the general wind was high, and was not measurably deflected by the eclipse-wind. At Belen College, Havana, the wind-direction was recorded to sixteen points, but this fell short of the detail needed for accurately determining the eclipse-wind. However, notwithstanding the various defects in the records, it will be seen that there is a surprising agreement in the eclipse-winds as determined for different stations with different weather conditions. The eclipse-winds, determined in the manner described above, are given in Tables I. to IX. These results, when plotted, indicate very clearly an outflow of wind from around the area of total eclipse, and an inflow around the borders of the penumbra. But there are

certain irregularities due to the irregular fluctuations usual to the wind. In order to diminish the effect of these, I selected the observations at, or near, the beginning of each fifteen-minute interval, and smoothed them by the formula $\frac{a + 2b + c}{4}$. The results are given in Table X. These winds were plotted at their proper places on maps of the United States for 8:15 A. M., 75th meridian time, when the umbra, or area of totality, was about to enter the American continent from the Pacific; and were also plotted for 9 A. M., when the umbra had passed off the coast of the United States on to the Atlantic Ocean. These maps are given in Plate II., Figs. 1 and 2. The position of the umbra is shown on each map by a dark circular area. The depressions of temperature at 8:15 A. M., and at 9 A. M. at the different stations, as given in Tables I. to IX., were plotted on the charts with the winds, and isotherms were drawn. The weather-conditions at each station are indicated by symbols, and the velocity of the eclipse-wind is indicated by the length of the arrow. The winds were nearly reversed in direction at the various stations as the umbra moved from one side of the continent to the other; but both charts, Figs. 1 and 2, show a distinct anticyclonic circulation and an outflow of air extending from about the umbra, or central area of the eclipse, to a distance of at least 1,500 or 2,000 miles. In Fig. 1, the outer limit of the outflow appears to be in New York, beyond which there is an inflow. In this figure the observing stations are so far in advance of the central area of the eclipse that no appreciable depression of temperature is shown; but in Fig. 2, which coincides with the time of greatest depression of temperature at Wadesboro, Washington, and Virginia Beach, there is a central area where the temperature-depression exceeds 8° F. This area of greatest cold lags behind the umbra about 500 miles. The charts, Fig. 1 and Fig. 2, show only a portion of the eclipse-area, or penumbra, which extended from near the equator to the pole and was about 5,000 miles in breadth. Hence these charts do not show the winds on the outer area of the penumbra, or the successive changes which occurred at any one station as the eclipse passed over it. A view of these changes is obtained by plotting the winds, temperatures, etc., at certain stations, when they were successively in different parts of the eclipse-area. The eclipse-shadow was travelling with a velocity somewhat greater than 2,000 miles an hour. By placing the stations at their proper distances from the path of the umbra, and plotting the successive 15-minute observations at intervals of about 500 miles, a synoptic chart is obtained showing the conditions observed at any given station, or group of stations, when they were in different portions of the eclipse-area.

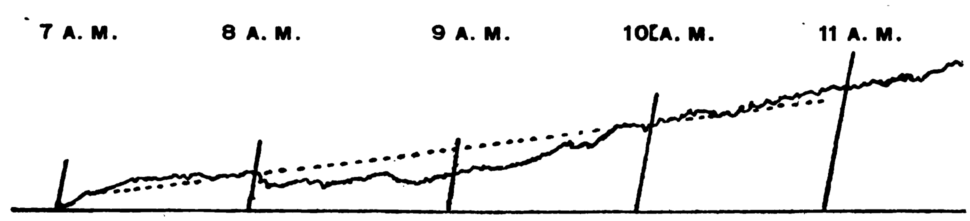
In this way, Figs. 3 to 6 were constructed. In all these diagrams, the direction and the width of the path of the umbra are indicated by parallel lines forming long arrows. The central, shaded area shows the umbra; and the outer circle or portion of a circle shows the outer limit of the penumbra. Fig. 3 shows the eclipse-winds at Blue

Hill and at Wadesboro, N. C. The directions are plotted in degrees, and the velocities are shown by the lengths of the arrows. Fig. 4 shows the same thing for Ithaca, N. Y., and Washington, Ga. Fig. 5 is a composite in which the arrows north of the path of the umbra are the mean of Ithaca and Blue Hill, the arrows along the path are the mean of Washington, Ga., and Wadesboro, N. C., and the arrows south of the path represent the eclipse-winds at Belen College, Havana. The data are taken from Table XI., which was obtained by combining the results for stations similarly situated in regard to the path of the eclipse. Figs. 3 to 5 indicate distinctly an anticyclonic circulation of the wind around the centre of the eclipse, extending outward to a distance of about 1,500 miles from the umbra. Outside of this area, which is inclosed by a circle formed by a broken line, there is an equally distinct cyclonic circulation of the winds, about 1,000 miles in width, extending to the edge of the penumbra. Beyond this there are indications of another ring of outflowing winds. The position of the inner circle where it crosses the path of the umbra corresponds, approximately, to the places of greatest depression of the curve of air-pressure below a straight line connecting the pressure at the beginning and the end of the eclipse; see Plate I., Fig. 1. The outer circle of broken lines in Fig. 5, surrounding the eclipse-area, represents a probable ring of high pressure surrounding the penumbra. Fig. 6, Plate II., shows a composite of the observed air-temperature in different portions of the eclipse. The data north of the path of the umbra are derived from the mean of the observations at Ithaca and Toronto; the data along the path are derived from the mean of the observations at Washington, Ga., and Wadesboro, N. C. These data are given in Table XI. The data south of the path are from Belen College, Havana. The isotherms show an elliptical area of greatest cold, central about 500 miles in the rear of the umbra. From this centre the temperature-departures diminish to zero at the edge of the penumbra. The greatest depression of temperature is north of the track of the umbra. This was chiefly due to the continental effect. There was, north of the path of the umbra, a large land-surface which cooled more rapidly than the ocean in the vicinity of Havana. The difference may also have been due in part to the fact that the sky was partly cloudy at Havana. On comparing stations north of the path of the umbra, as for example, New York and Toronto, at one of which the sky was cloudy and at the other clear, the temperature is found to be less depressed by the eclipse, at the station where it was cloudy. On comparing stations with the same weather conditions, but at different heights, as New York and Blue Hill, the first being near sea-level and the latter about 640 feet above the adjacent sea, there is found a much less depression of temperature by the eclipse at the higher station than at the lower. This fact indicates that the fall of temperature in the eclipse is confined to a stratum within a few hundred feet of the earth's surface, and probably largely to the first one hundred feet. The analogy to the diurnal change of

temperature would also indicate that this must be true. The shape and the position of the areas showing the humidity-departures are so similar to those of the temperature that it is not deemed necessary to reproduce them. The chief difference is that, in one case, the departures are plus and in the other minus. In other words, during the eclipse there is a rise of absolute and of relative humidity and a fall of temperature.

Comparison with Observations in Other Eclipses.

The changes in temperature and humidity attending the eclipse of May 28, 1900, were exactly similar to those observed in previous eclipses. Heretofore the change of air-pressure attending solar eclipses has not been certainly determined. In the eclipse of August 19, 1887, Professor Hesehus found a slight lowering of the pressure. (Nature, Vol. 38, p. 625.) On the other hand, for the same eclipse, Schönrock noted only a slight maximum of pressure, which followed totality about 1h. 30 m. (Repertorium für Meteorologie, Vol. 12.) Most observers have looked for an increased pressure, and some have concluded that no measurable change occurs during the eclipse. In the eclipse of May 28, 1900, the observations indicate very clearly a lowering of the air-pressure during the eclipse, the minimum of pressure occurring soon after the minimum of air-temperature.. This is shown by the observations at Washington, Ga., at Blue Hill and at Toronto. See Tables I., IV. and VI. The accompanying diagram shows a record made by an "aerograph," or air-barometer, at Toronto. The air chamber of the barometer was sunk eight feet in the ground to eliminate the influence of external changes of temperature. (The Hydro-aerograph, by F. Napier Denison, Report of Brit. Ass. Adv. of Science, Dover, 1899.) The curve from the original record is here reproduced on the same scale without correction in any way.



The eclipse began at Toronto about 7:47 A. M., and ended about 10:18 A. M. A straight, dotted line is drawn through the curve, connecting the pressure recorded at the beginning and the end of the eclipse. It is seen that the recorded pressure was generally below the dotted line throughout the eclipse, but there was an upward swell between 8 and 9 A. M., reaching a maximum about 8:45 A. M., and shortly preceding the middle of the eclipse. Immediately preceding and following the beginning and the ending of the eclipse, the curve rises above the dotted line, indicating a ring of high pressure surrounding the penumbra, and thus agreeing perfectly with the distribution of pressure demanded by the wind-circulation.

In order to obtain the normal pressure-changes produced by eclipses, I have taken the observations made by Professor Upton and Mr. Rotch in three total eclipses, and, by the methods previously described, I have separated the pressure-changes attributable to the eclipse from those due to other causes. The results are shown in Table XII. The mean of the observed pressures at Chlamostino (near Iwanowo), Russia, on August 19, 1887, are given in column 2, and the times in column 1. (American Meteorological Journal, Vol. 4, p. 451.). This eclipse occurred at a time of day when the pressure was rising steadily ; and the changes due to the eclipse are separated from the diurnal and other changes by interpolating a uniform rise, having the same values as the observed pressures at the beginning and the ending of the eclipse. These values are given in column 3 ; and the differences, showing the changes of pressure during the eclipse, are given in column 4. In the fifth and the sixth columns of Table XII. are given the means of the observations at Willows, Cal., on January 1, 1889. (Annals of the Astronomical Observatory of Harvard College, Vol. XXIX., No. 1.) This eclipse occurred at about the time of the diurnal minimum of pressure ; and consequently the change due to the eclipse cannot be separated from the diurnal change by simple interpolation. Fortunately, observations on December 31 and January 2 allowed the form of the diurnal curve to be approximately determined, as given in the seventh column of Table XII. By getting the differences and interpolating a uniform fall between the beginning and end of the eclipse, the changes of pressure during the eclipse are obtained as in the preceding case. The changes in pressure during the eclipse of April 16, 1893, at Mina Aris, Chile, given in the twelfth column of Table XII., are from barograph records of Mr. Rotch. Mr. Rotch's records covered an interval of seven days, and the mean pressures derived from these, not including the day of the eclipse, are in column 13 of Table XII. These means probably give the normal diurnal change with considerable accuracy, since the daily oscillation in this latitude is very constant. The difference between the normal pressure and the pressure on the day of the eclipse is given in the fourteenth column. Subtracting .007 inch from these differences, to allow for a constant difference of level, the changes of pressure during the eclipse are shown. These final differences are given in the fifteenth column of Table XII. The seventeenth column gives the departures in pressure for the eclipse of May 28, 1900, as derived from Table I. The missing values are interpolated and are given in parentheses. They were used in obtaining the mean departures for all the eclipses given in the final column of Table XII. The times of the beginning and the ending of each eclipse is given in local time.

The average of the pressures at 23 stations (which are given for the eclipse of August 19, 1887, by Schönrock in the Repertorium für Meteorologie, Vol. 12) is shown in Table XIII. The first line gives the number of minutes preceding and following the total phase. The second line gives the departures in millimeters of the observed

pressures from the pressure observed at the time of totality. The third line gives the uniform fall which may be attributed to the approach of an ordinary cyclone; and the fourth line gives the differences or departures of pressure during the eclipse from a uniform fall. The fifth line gives these differences in thousandths of an inch.

The departures of pressure for the various eclipses, after the elimination of the diurnal changes as explained above, and given in Table XII., are plotted in Plate III. The observations are represented by dots connected by straight broken lines. These lines show numerous small irregularities, and smooth curves are drawn through them. These curves are all similar in presenting three maxima and two minima. The central maximum undoubtedly corresponds with the anticyclonic circulation shown by the winds surrounding the umbra. The two minima are probably parts of a ring of minimum pressure which surrounds the anticyclone at a distance of about 1,500 miles from the umbra. The outer maxima are undoubtedly parts of a ring of high pressure which surrounds the edges of the penumbra. The influences of ocean and of continent are also apparent. In the eclipse of August 19, 1887, the path of the umbra was almost entirely over a land-surface; the changes of pressure are symmetrical, and the curve in Plate III. probably represents the normal curve. In the eclipse of January 1, 1889, the path of the umbra at the beginning was over the ocean, where the fall of temperature was probably slight; and the first part of the curve of pressure for that eclipse in Plate III. shows but slight changes, with a weak development of the first minimum. During the latter part of its course the umbra was over the land, where the fall of temperature was probably relatively large; as a result, the second minimum and the third maximum in the pressure-curve for California are well developed. In the eclipse of April 16, 1893, the course of the umbra was first over the Pacific Ocean, next over South America, and then across the Atlantic. In this case, the central maximum of pressure, formed when the umbra was over a land-surface, is the largest of the three maxima.

Mr. Eliot's study of the eclipse of January 22, 1898, in India (Indian Met. Memoirs, Vol. XI., No. 2), has arrived as this paper is passing through the press. His results show (1) an abnormal increase of pressure of about .04 inch during and following the eclipse. This increase, if due to the eclipse, probably resulted in some way from the form of the Indian peninsula, because a similar increase has not been observed in other eclipses. His results show (2) variations in the rate of this increase of pressure of such a nature that, if a uniform increase be assumed and subtracted from the observed increase, the residuals give a curve agreeing in form and range with those here found for other eclipses. There is a maximum of pressure immediately preceding the middle of the eclipse, a minimum about fifty minutes later, and a maximum following the end of the eclipse. His mean curve is not extended to show the maximum preceding the eclipse, but this is clearly shown in many of the individual curves.

COMPARISON WITH THEORY.

The low temperature, the circulation of the winds, and the form of the pressure-curve accompanying the eclipse of May 28, 1900, all proclaim the development by the eclipse of a cold-air cyclone, the theory of which has been so well worked out by Ferrel that no better description of it could be given than in his own words. Ferrel maintains, from theoretical considerations, that cyclones necessarily have an inner area of low pressure, surrounded by a ring of high pressure which Professor W. M. Davis has named a *pericyclone*. Ferrel further maintains that a cyclone may have its origin either in a high air-temperature increasing toward a central area, or in a low air-temperature decreasing toward a central area. The one he calls a cyclone with a warm centre, the other a cyclone with a cold centre. Of cyclones with a cold centre, he says: —

"If for any reason the central part of any given portion of the atmosphere of a somewhat circular form is maintained in any way at a lower temperature than the surrounding parts, and the temperature gradient on all sides is somewhat symmetrical, we have approximately the conditions which give rise to a cyclone. In this case it is readily seen that there must be a vertical circulation, as in the ordinary cyclone, but that it is reversed, out from the centre below and in toward the centre above, with a gradual settling down of the air in the interior to supply the outward current beneath. This vertical circulation, as in the case of the ordinary cyclone, gives rise to a cyclonic motion in the interior and an anticyclonic in the exterior part of the air under consideration, but in this case the gyratory velocity is greatest above and is less at lower altitudes, diminishing down to the earth's surface, where it is least. In the anticyclonic part the reverse takes place, the gyratory velocity being least above and greatest down near the earth's surface. The distance from the centre, at which the gyratory velocity vanishes and changes sign, is greatest above, and gradually becomes less, with decrease of altitude down to the surface, where it is nearest the centre. . . . The conditions of a cyclone with a cold centre which are the most nearly perfect, are those furnished by each hemisphere of the globe, as divided by the equator, in which the pole is the cold centre and the temperature gradient from the pole toward the equator is somewhat symmetrical in all directions from the centre. . . . The easterly motions in the higher latitudes and the westerly ones in the lower latitudes, in the one case, correspond to the cyclonic in the interior and the anticyclonic in the exterior part, and the belt of high pressure near the tropics to that of high pressure in the case of any cyclone with a cold centre. . . . The centre of a cyclone with a cold centre may, or may not, have a minimum pressure, according to circumstances. A certain amount of temperature gradient, and of pressure gradient which is independent of the gyratory motion, as explained in the case of the general circulation of the atmos-

phere, is necessary to overcome the friction in the lower strata and to keep up the vertical circulation, upon which the cyclone depends; and the pressure gradient, which depends upon the temperature gradient and is independent of the gyrations, may be such that the increase of pressure in the central part due to this cause may be greater than the decrease of pressure arising from the cyclonic gyrations, espe cially where surface friction is great." (A Popular Treatise on the Winds, pp. 337–339.)

The eclipse-cylone is of especial interest from a theoretical point of view, because its origin, clearly connected with the fall of air-temperature attending the eclipse, is freed from all questions relating to the condensation of vapor, and from all questions relating to the dynamic effects due to the meeting of air-currents which might possibly influence the origin of the ordinary cyclone. The eclipse may be compared to an experiment by Nature in which all the causes that complicate the origin of the ordinary cyclone are eliminated, except that of a direct and rapid change of temperature. The results derived from the observations, by eliminating the influence of other known phenomena, show quantitatively the effects of a given fall of temperature near the earth's surface in a given time. They show that a fall of temperature is capable of developing a cold-air cyclone in an astonishingly short time, with all the peculiar circulation of winds and distribution of pressure that constitute such a cyclone. They show, furthermore, that a fall of temperature of the air does not act primarily to cause an anticyclone but a cyclone, and the anticyclone is a secondary phenomenon, or rather a part of the cyclone.

The eclipse-cyclone shows no apparent lag, or dynamic effect, due to the inertia of the air. To keep pace with the eclipse-shadow, moving about 2,000 miles an hour, the eclipse-cyclone must have formed continuously within the shadow and must have dissipated in the rear almost instantly. In this way its motion may be considered to have a certain analogy to wave-motion. Any given particle of air, moving with the velocity of the eclipse-winds, could not have moved more than five miles as a maximum during the passage of the eclipse. Hence all the changes of pressure must have been derived from the deflective influence of the earth's rotation, acting on air moving this distance.

In brief, the meteorological effects of the eclipse are important: (1) because they confirm so well Ferrel's theory of the cold-air cyclone; (2) because they show the wonderful rapidity with which cyclonic phenomena can develop and dissipate in the atmosphere; and (3) because they show that cyclones do not necessarily drift with the atmosphere, but move with their originating cause, which, in the eclipse, had a progressive velocity of about 2,000 miles an hour.

THE DIURNAL CYCLONES; A NEW SUGGESTION AS TO THE CAUSE OF THE DIURNAL PERIOD IN ATMOSPHERIC PRESSURE.

The discovery that the brief fall of temperature attending a solar eclipse produces a well-developed cyclone which moves with the eclipse-shadow at the rate of about 2,000 miles an hour, suggests that the diurnal fall of temperature, due to the occurrence of night, must also produce, or tend to produce, a cold-air cyclone. Since the heat of the day produces, or tends to produce, a warm-air cyclone, there must tend to occur each day two minima of pressure, one near the coldest part of the day, and another near the warmest part of the day, with areas of high pressure between them due to the overlapping of the *pericyclones* surrounding the cold-air and the warm-air cyclones, respectively. These causes must produce, in part or entirely, the well-known double diurnal period in air-pressure. At any rate, in view of the fact that an eclipse causes a cyclone over a half hemisphere, it will be necessary, before rejecting such a theory, to show that the fall of temperature at night does not produce a cyclone; or, that this cyclone and the corresponding warm-air cyclone of the day do not appreciably influence the barometer.

As a preliminary step in comparing the theory with observation, I have averaged the diurnal pressures at Blue Hill and at Kew for three epochs of the year; the winter solstice, the summer solstice, and the equinoxes. I have selected Blue Hill and Kew, which are oppositely situated in regard to the great continents and the Atlantic Ocean, in order that the influence of land and water may be partially eliminated, and an approximation to a normal, diurnal wave may be obtained. These values are given in Table XIV. Next, for the night hours, a symmetrical curve of pressure was constructed to represent the cold-air cyclone. This curve was modelled after that found in the eclipse and shows the three maxima and two minima of pressure. The centre of this curve is placed coincident with the time of minimum temperature. Next, a curve of pressure was constructed to represent a warm-air cyclone with the minimum pressure at the warmest time of day, and maxima about six hours preceding and following to represent the ring of high pressure. The ranges in each case were determined from observation. The hourly values, read from these curves, are given in Table XV. The values for the cold-air and the warm-air cyclones were added together and the results are plotted in curves in Plate IV., where they may be compared with the curves plotted from the mean of the observations. By subtracting the assumed symmetrical values from the mean of the observed values at corresponding

hours, the results in Table XVI. are obtained. These results show that there is an excess of the observed pressures about the time of the morning maximum, and a deficiency about the time of the evening maximum. This difference is probably produced by a lack of symmetry in the diurnal cyclones, but chiefly in the warm-air cyclone. If the pressure in the *pericyclone* in the front of the warm-air cyclone be increased a few thousandths of an inch, and diminished in the rear, the theoretical curve will agree very closely with the curve of observed values. This lack of symmetry may be due to the irregular distribution of land and water. For example, the excess of pressure in the morning and the deficiency at night are chiefly the result of the Blue Hill data. Blue Hill is so situated that the morning ring of high pressure of the warm-air cyclone passes over it at the time when the maximum temperature occurs over the centre of the large land surfaces of the eastern hemisphere, where the diurnal heating must be great, and the diurnal cyclone well developed. On the other hand, the evening *pericyclone* passes over Blue Hill when the centre of greatest afternoon-heat is over the Pacific, where the diurnal heating is small, and the cyclone weak.

The observations with kites at Blue Hill have shown that the diurnal change of temperature in the atmosphere is chiefly confined to the thin stratum within 1,000 meters of the earth's surface. Hence, this stratum probably plays the chief part in the production of the diurnal cyclones, which consequently must be greatly affected by the distribution of land and water with their well-known influence on the diurnal temperature. The final quantitative determination of the problem will probably require the separate determination of the influence of each continent, peninsula and island. It is probable that continents like North America, peninsulas like Spain, and even islands like Great Britain, tend to generate systems of cold-air and of warm-air cyclones which are superimposed upon the normal, diurnal period of the world as a whole.

To test further the theory of the diurnal cyclones, the phenomena which the theoretical conditions seem to demand are compared with the large mass of information concerning the diurnal changes in pressure accumulated by Buchan, Rykatchew, Angot, Hann, Schmidt, Curtis, and others.

(1) Omitting the irregular influence of land and water, the greatest diurnal change of temperature occurs in the tropics and approaches zero at the poles. As a consequence, the diurnal cyclones would be central over the equatorial region, producing the greatest diurnal range of pressure there; and the range would decrease to a minimum in the polar regions, as shown by observation.

(2) The greatest range in the double diurnal variation in pressure must occur at the equinoxes, because the contrast between day and night, taking the world as a whole, is then at a maximum. At the summer and the winter solstices, the opposite poles have continuous day and continuous night, respectively, so that the diurnal oscillations are confined to a narrower zone than at the equinoxes. The diurnal cyclones and the

oscillations of pressure, being dependent on the amount of daily change of temperature over the world at large, are, in consequence, less at the solstices than at the equinoxes, as shown by the analysis of Dr. Hann.

(3) The positions of the diurnal minima and maxima of pressure, being dependent on the positions of the diurnal minimum and maximum of temperature, must shift their hour of occurrence in accordance with the changes in the hours of minimum and maximum temperature, and this agrees with observation; see the plotted curves in Plate IV.

(4) In high northern latitudes, the morning minimum of temperature and of pressure would be so much displaced that the *pericylone* in the cold-air cyclone would not overlap the *pericyclone* of the warm-air cyclone, but would occur about 1 A. M., producing the third maximum discovered by Rykatchew. (See the observed and the computed curves for January, Plate IV.)

(5) The intensities of the diurnal cyclones would depend, in part, on local as well as on general conditions, and, consequently, the diurnal ranges in pressure would respond in a certain degree to local changes in the diurnal temperature-range, as shown by Mr. R. H. Curtis.

(6) Since each large land-surface would tend to develop a system of diurnal cyclones of its own, the diurnal pressure-curves over the interior, and on the coast, would differ materially, as shown by observation.

(7) The north pole being on the edge of the general diurnal cyclone as well as of the continental cyclones, the diurnal changes in pressure would arise chiefly from changes in the intensity of the *pericyclone*. The pressure at the pole would consequently oscillate in a phase opposite to that over the continents, being at a maximum when the general cyclone was re-enforced by the warm-air cyclones of the continents, and at a minimum when the afternoon minimum of the diurnal cyclone was over either ocean. This conclusion agrees with observation. (See American Meteorological Journal, Vol. 6, p. 150.)

(8) Considering a vertical section of the atmosphere, the warm-air cyclone would disappear above a certain neutral plane; and at higher levels it would be replaced by an anticyclone. On the other hand, the cold-air cyclone would increase in intensity with increase of height; and, on account of its *pericyclone*, there would still be a tendency to a double diurnal oscillation of the barometer, such as is shown by harmonic analysis, though the chief effect would be a single oscillation.

(9) Although over continents, where the diurnal oscillation of temperature is large, the warm-air cyclone would be much increased in intensity, the cold-air cyclone would not necessarily show increased intensity, because the increased friction over continents, especially where mountains prevailed, would diminish the air-movements on which depends the fall of the barometer in the cold-air cyclone. The rise of pressure, which

normally exists at the centre of the cold-air cyclone, would be accentuated; and it might easily happen that the fall of pressure in the cold-air cyclone at the earth's surface was no greater than over the sea, where there was a much smaller diurnal fall of temperature, and, at the same time, much less friction. Hence, the typical continental diurnal pressure-curve has a deep afternoon minimum and a shallow morning minimum. In valleys, where air-circulation is almost entirely checked, the rise of pressure, due to the increased density of the chilled air, is the predominant feature at night, so that the diurnal pressure-curve tends towards a single oscillation, with a maximum at night and a minimum in the afternoon. Hence, the diurnal barometric oscillations at any place are partly the result of local and partly the result of far distant causes. A slight fall of temperature would be more effective over the oceans in the diurnal cyclone than in the eclipse cyclone, because it acts through a longer time.

In the future study of this problem, these various effects should be separated and studied separately, if possible. It is doubtful whether the harmonic analysis is the proper method of research, because there are two independent variables, the cold-air and the warm-air cyclone, which approach each other from the summer to the winter solstice, and then recede again. This change in position produces an unsymmetrical curve of pressure, and is probably the chief cause of the third term in the harmonic series, and also of its annual variation. The first term in the harmonic series may be produced by the greater development of the warm-air than of the cold-air cyclone. In this case, the changes in harmonic values would be fictitious and not natural, although their values would be some function of the natural conditions which might thus be detected. If the fall of pressure in the cold-air cyclone is not increased by the cold over continents, as suggested in (9), then the first term in the harmonic series would vary greatly in passing from the ocean to the continent, while the second term would not vary to the same extent, if at all.

The diurnal cyclones move from east to west, contrary to the motion of ordinary cyclones in temperate latitudes. Their velocity of motion is about 1,000 miles an hour at the equator, and diminishes toward the poles. The two charts at the bottom of Plate IV. indicate the circulation of the surface-winds and upper currents in the diurnal cyclones. In these charts, the ordinates represent the hours of the day, and the abscissæ represent distances from the equator. The data for the surface winds are derived from observations at Blue Hill, lat. 42° 13′ N., long. 71° 7′ W., and Cordoba, Argentina, lat. 31° 25′ S., long. 64° 12′ W. (Annals of the Astron. Observatory of Harvard College, Vol. XXX., Part IV., pp. 415 and 419.) The directions of the arrows represent, in the usual way, the wind-directions, and the position of the arrow in each case shows the time of maximum frequency of each wind. Thus the greatest diurnal frequency of southerly winds occurs at Cordoba at 7 A. M., and at Blue Hill between 7 and 8 P. M.

There is also a second maximum frequency of southerly winds at Blue Hill about 11 A. M. The wind-arrows at Cordoba and Blue Hill are in general from opposite directions and distinctly indicate a circulation of the wind around two cyclonic centres passing along the equator, and an outflow of air from high pressures intermediate between them. The lower chart, headed *Upper Winds*, shows the times of greatest frequency of each wind-direction in the upper air between 2,500 and 10,000 meters. These times were determined by observations of clouds at Blue Hill, and from hourly wind records on the Säntis, in Switzerland. Cloud strata at three different levels between 3,000 and 10,000 meters above Blue Hill each gave a result similar to the other, and this is indicated by the heavy arrows in the chart. (Annals of the Astron. Observatory of Harvard College, Vol. XXX., Part IV., pp. 415 and 419.) The observations on the Säntis, at an elevation of 2,500 meters, are indicated by the light arrows in the same diagram. There are no observations available at these heights south of the equator; but the observations north of the equator indicate a circulation very different from that at the earth's surface. There are apparent at these heights only one cyclonic and one anticyclonic circulation. The low pressure in the cold-air cyclone of night persists at these high levels, and probably with increased intensity; while the low pressure in the warm-air cyclone of day has been replaced by a high pressure and an anticyclonic circulation.

Summary.

The points in favor of this theory (that the double diurnal period in pressure is due to two diurnal cyclones, one developed by the cold of night and the other by the heat of day) may be stated in brief as follows: The theory is based on well-known physical laws. The possibility of a cold-air cyclone under conditions similar to the diurnal cyclone is confirmed by the eclipse-cyclone. The theory explains the annual oscillations of the maxima and the minima of pressure. It explains the occurrence of a third maximum in high latitudes in winter, and also the so-called inversion in the diurnal period near the pole. The theory also explains why the warm-air cyclone is well developed over continents, and on clear days, and causes a marked fall in the barometer during the afternoon, and why the morning minimum of pressure over continents does not attain an excessive development as compared with that over oceans, where there is slight retardation of the air movements on which the fall of the barometer in the cold-air cyclone depends.

TABLE I.

WASHINGTON, GA. Lat. 33° 44′ N.; Long. 82° 45′ W.

A. LAWRENCE ROTCH and S. P. FERGUSSON, *Observers.*

Eclipse began 7:33 A. M.; Total 8:41 — 8:42 A. M.; Ended 9:59 A. M.

Observations.								Departures of Observed Values from an Interpolated Uniform Change during Eclipse.						Departure of Observed from Mean Wind.		Eclipse Wind.	
					Wind.							Wind.					
Time of 75th Meridian.	Pressure. (29.+ Inches.)	Temperature, F°.	Relative Humidity.	Vapor Pressure. (Inch.)	Direction. W. of S.	Velocity. 1	Velocity. 2	Minus. Pressure (Inch)	Temperature, F°.	Relative Humidity.	Vapor Pressure. (Inch.)	Direction.	Veloc. (Miles.)	Direction.	Velocity. (Miles.)	Direction.	Velocity. (Miles.)
A. M.					°							°		°			
7:31	..	..	..	..	44	..	..	..	..	..	..	—11	..	—16	..	S 63° E	1.3
7:36	..	..	..	..	67	5.1	4.5	..	..	..	..	+12	.0	+ 7	.0	N 27° W	.6
7:41	.478	66.4	63	.42	79	3.9	4.3	.001	+.2	0	.00	+24	— .2	+19	— .2	N 13° W	1.5
7:46	..	..	..	..	67	4.8	5.1	..	..	..	..	+12	+ .5	+ 7	+ .6	N 73° W	.8
7:51	.478	66.7	64	.43	58	5.4	5.6	.002	—.1	+ 2	+.01	+ 3	+ .9	— 2	+1.1	S 50° W	1.1
7:56	..	..	..	..	60	5.7	6.0	..	..	..	..	+ 5	+1.2	0	+1.5	S 60° W	1.5
8:01	.480	67.1	63	.42	73	6.3	5.4	.002	+.3	+ 2	.00	+18	+ .6	+13	+ .9	N 62° W	1.5
8:06	..	..	..	..	65	4.5	5.1	..	..	..	..	+10	+ 2	+ 5	+ .6	N 83° W	.7
8:11	.480	68.0	63	.43	70	5.7	5.7	.003	.0	+ 3	+.01	+15	+ .7	+10	+1.2	N 78° W	1.5
8:16	..	..	..	..	73	5.7	5.6	..	..	..	..	+18	+ .6	+13	+1.1	N 68° W	1.6
8:21	.482	67.3	62	.42	59	5.4	4.3	.002	—1.3	+ 3	.00	+ 4	— .8	— 1	— .2	N 80° E	.2
8:26	..	..	..	..	52	3.3	3.6	..	..	..	..	— 3	—1.6	— 8	— .9	N 88° E	1.1
8:31	.483	66.6	64	.42	50	3.9	4.2	.003	—2.6	+ 6	+.01	— 5	—1.1	—10	— .3	S 56° E	.8
8:36	..	..	..	..	63	4.5	3.1	..	..	..	..	+ 8	—2.2	+ 3	—1.4	N 53° E	1.4
8:41	..	66.3	..	..	67	1.8	(3.0)	..	—3.5	..	..	+12	—2.4	+ 7	—1.5	N 47° E	1.6
8:46	..	..	..	..	62	0	(2.0)	..	..	..	..	+ 7	—3.5	+ 2	—2.5	N 58° E	2.5
8:51	.485	65.7	70	.43	52	0	(2.0)	.003	—4.7	+15	+.02	— 3	—3.6	— 8	—2.5	N 66° E	2.5
8:56	..	..	..	..	34	0	(2.0)	..	..	..	..	—21	—3.6	—26	—2.5	N 78° E	2.9
9:01	.486	66.0	71	.45	33	.3	(2.0)	.003	— 5.0	+17	+.04	—21	—3.7	—26	—2.5	N 78° E	2.9
9:06	..	..	..	..	54	.3	(2.8)	..	..	..	..	— 1	—3.0	— 6	—1.7	N 69° E	1.8
9:11	.487	67.3	73	.48	54	1.2	(3.0)	.004	—4.2	+20	+.07	— 1	—2.9	— 6	—1.5	N 69° E	1.6
9:16	..	..	..	..	63	2.4	(3.1)	..	..	..	..	+ 8	—2.9	+ 3	—1.4	N 53° E	1.4
9:21	.488	69.1	64	.45	72	1.8	3.6	.004	—3.0	+12	+.05	+17	—2.5	+12	— .9	N 23° E	1.2
9:26	..	..	..	..	72	5.4	6.1	..	..	..	..	+17	— .1	+12	+1.6	N 79° W	1.9
9:31	.493	72.1	55	.43	75	6.9	7.3	.001	—1.6	+ 4	+.03	+20	+1.0	+15	+2.8	N 84° W	3.2
9:36	..	..	..	..	54	7.8	7.6	..	..	..	..	— 1	+1.2	- 6	+3.1	S 45° W	3.1
9:41	.494	71.1	54	.42	55	7.5	7.0	.001	—2.1	+ 4	+.02	0	+ .5	— 5	+2.5	S 47° W	2.6
9:46	..	..	..	..	..	6.6	(6.6)	..	..	..	..	..	.0	..	+2.1	S 45° W	2.1
9:52	.496	73.6	49	.40	..	..	..	.001	— .2	0	.00	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10:31	.502	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

NOTE. The sky was cloudless throughout the eclipse except for a few streaks of cirrus near the southern horizon moving from northwest. The temperature and humidity were determined by an Assmann aspiration psychrometer. The wind direction and velocity were taken from self-registering instruments. From 8:40 A. M. to 8:58 A. M. the anemometer cups did not turn although there was noticeable wind, and the observers estimated its velocity at two miles an hour. The pressure was read from a large Casella aneroid, compensated for temperature. Under Wind Velocity, 1 gives recorded velocities for five minutes; 2 gives the mean of consecutive numbers in 1, the values in parentheses having been corrected by the observers' estimates.

TABLE II.

WADESBORO, N. C. Lat. 34° 59′ N.; Long. 80° 5′ W.

H. H. CLAYTON, *Observer.*

Eclipse began 7 : 37 A. M.; Total 8 : 46—8 : 47 A. M.; Ended 10 : 07 A. M.

Observations.						Departures of Observed Values from an Interpolated Uniform Change During Eclipse.					Departures of Observed from Mean Wind.		Eclipse Wind.	
				Wind.					Wind.					
Time of 75th Mer.dian.	Temperature, F°.	Relative Humidity.	Vapor Pressure. (Inch.)	Direct'n.	Veloc. (Miles.)	Temperature, F°.	Relative Humidity.	Vapor Pressure. (Inch.)	Direct'n.	Veloc. (Miles.)	Direction.	Velocity. (Miles.)	Direction.	Velocity. (Miles.)
A. M.									°		°			
6 : 25	64.0	58	.35	SW	2.7	..	..	..	..	..	..	..	..	..
6 : 30	64.4	58	.35	WSW	3.8	..	..	..	..	..	..	..	..	..
6 : 45	67.5	46	.31	WSW	5.4	..	..	..	..	..	..	..	..	..
7 : 00	..	..	..	WSW	..	..	..	..	..	..	..	..	..	..
7 : 05	66.9	53	.36	W	5.8	..	..	..	..	..	..	..	N 41° W	2.1
7 : 15	68.0	49	.32	WSW	4.7	..	..	..	..	..	..	..	..	..
7 : 30	68.9	50	.35	WSW	3.6	..	.	..	..	..	..	..	N 79° E	1.1
7 : 45	70.7	46	.35	WSW	4.5	+ .6	— 1	.00	0	+ .3	— 3	— .2	S 61° E	.3
8 : 00	70.2	46	.34	WSW	5.6	— .7	0	—.01	— 1	+1.3	— 3	+ .9	S 50° W	.8
8 : 15	69.3	50	.35	WSW	4.3	—2.1	+ 5	.00	— 1	0	— 3	— .4	S 81° E	.5
8 : 25	67.1	58	.39	W	6.0	—1.5	+13	+.04	+21	+1.6	+20	+1.3	N 45° W	2.2
8 : 30	67.3	57	.37	W	..	—4.5	+13	+.02	+21	..	+20	..	..	..
8 : 35	68.2	52	.36	W	..	—2.8	+ 8	+.01	+20	..	+20	..	..	..
8 : 40	65.5	63	.39	WSW	5.1	—6.7	+20	+.04	— 4	+ .6	— 3	+ .4	S 36° W	.5
8 : 45	..	..	..	WSW	4.5	..	..	..	— 4	— .1	— 3	— .2	S 61° E	.3
8 : 50	64.0	65	.39	WSW	4.5	—8.5	+22	+.05	— 4	— .1	— 3	— .2	S 61° E	.3
8 : 55	64.4	63	.39	WSW	4.0	—8.3	+20	+.08	— 5	— .7	— 3	— .7	N 87° E	.7
9 : 00	63.9	71	.42	WSW	3.6	—9.0	+29	+.08	— 5	—1.1	— 3	—1.1	N 80° E	1.7
9 : 10	64.6	68	.42	WSW	3.8	—8.7	+26	+.08	— 6	—1.0	— 3	— .9	N 84° E	.9
9 : 15	68.4	56	.39	WSW	4.9	—5.0	+14	+.05	— 6	+ .1	— 3	+ .2	S 18° W	.3
9 : 20	69.5	..	..	SW	3.8	—4.1	..	..	—29	—1.1	—25	— .9	S 57° E	2.0
9 : 30	71.1	46	.35	SW	5.0	—3.0	+ 5	+.01	—29	+ .1	—25	+ .3	S 24° E	2.1
9 : 35	72.0	43	.35	W	..	—2.3	+ 2	+.01	+15	..	+20	..	..	..
9 : 40	72.5	..	..	W	4.0	—2.0	..	..	+15	—1.0	+20	— .7	N 14° E	1.7
9 : 45	72.9	41	.34	W	7.8	—1.8	+ 1	.00	+14	..	+20	..	N 64° W	3.8
9 : 50	..	..	..	W	6.3	..	..	..	+13	+1.2	+20	+1.6	N 49° W	2.5
9 : 55	74.3	40	.33	W	4.9	— .7	0	—.01	+12	— .2	+20	+ .2	N 17° W	1.6
10 : 00	74.7	40	.35	WSW	4.5	— .5	+ 1	+.01	—11	— .7	— 3	— .2	S 71° W	.3
10 : 15	76.3	37	.33	W	5.8	..	..	..	..	..	..	.	N 41° W	2.1
10 : 30	77.9	36	.35	WSW	5.4	..	..	..	..	..	..	..	S 47° W	.7
11 : 30	82.0	31	.33	SW	4.9	..	..	..	..	..	..	..	..	..
12 : 40	84.6	26	.31	SW	4.3	..	..	..	..	..	..	..	..	..

NOTE. One or two bands of ci.-cu., changing to ci., passed over the zenith between 6 : 25 and 6 : 30 A. M. Nephoscope observations showed that they were moving from N. 79° W. with a velocity of 54 miles per hour, or 79 feet per second (assuming them to have been at the mean height of ci). The sky throughout the eclipse remained cloudless, except one or two streaks of cloud near the horizon. At 3 P. M. cu. were observed at a height of 2,793 meters (computed from dew point), moving from S. 86° W.; velocity, 15 miles per hour, or 21 feet per second.

TABLE III.

VIRGINIA BEACH, VA. Lat. 36° 50′ N.; Long. 75° 59′ W.

G. W. PICKARD and E. K. PUTNAM, *Observers.*

Eclipse began 7:41; Total 8:52—8:54; Ended 10:15 A. M.

Observations.				Departures of Observed Values from an Interpolated Uniform Change During Eclipse.			Departures of Observed from Mean Wind.	
Time of 75th Meridian.	Temperature, F°.	Wind. Direction.	Wind. Estimated Velocity. (Miles.)	Temperature. F°.	Wind. Direction.	Wind. Velocity. (Miles.)	Direction.	Velocity. (Miles.)
A. M.					°		°	
5:00	63.0	E	1–2	..	..	..	..	..
6:00	60.5	..	..	..	..	..	..	..
7:45	69.0	S50°E	..	+ .4	0	..	—25	..
8:00	68.5	S45°E	2–4	— .1	+ 2	..	—20	..
8:15	67.5	S40°E	2–4	—1.1	+ 5	..	—15	..
8:20	66.5	S45°E	2–4	—2.0	— 1	..	—20	..
8:25	65.5	S45°E	2–4	—3.0	— 2	..	—20	..
8:30	64.5	S30°E	2–4	—3.9	+12	..	— 5	..
8:35	63.5	S25°E	..	—4.9	+16	..	0	..
8:38	62.5	S10°E	..	—5.9	+30	..	+15	..
8:40	62.2	S	..	—6.4	+40	..	+25	..
8:43	61.8	S10°E	..	—6.6	+29	..	+15	..
8:45	61.5	S10°W	7	—6.5	+49	..	+35	..
8:47	61.1	S10°E	7	—7.2	+28	..	+15	..
8:50	60.7	S25°E	5	—7.6	+13	..	0	..
8:55	59.8	S 5°E	..	—8.5	+32	..	+20	..
9:00	59.6	S 5°E	1	—8.7	+31	..	+20	..
9:20	61.0	S25°E	2	—7.1	+ 7	..	0	..
9:40	64.0	S25°E	2	—4.1	+ 3	..	0	..
10:10	67.0	S20°E	2	—1.1	+ 5	..	+ 5	..
10:20	69.0	S25°E	4	..	..	..	..	..

NOTE. A slight haze was seen forming along the beach at 8:45 A. M. and at 8:55 A. M. this haze was well marked; from 8:57 to 8:59 A. M. heavy dew was observed on the cloud mirror, and the shoes of a man who had walked through the grass were noticed to be wet. The sky remained cloudless throughout the eclipse, except that slight cirrus bands, with no apparent motion, were observed between 9:05 and 9:10 A. M.

TABLE IV.

TORONTO OBSERVATORY. Lat. 43° 39′ N.; Long. 79° 17′ W.

R. F. STUPART, *Director*.

Eclipse began 7:47 A. M.; Maximum 8:55 A. M.; Ended 10:18 A. M. (approximate times).

Observations.							Departures of Observed Values from an Interpolated Uniform Change During Eclipse.						Departures of Observed from Mean Wind.		Eclipse Wind.	
Time of 75th Mer. A. M.	Pressure. (29.+ Inches.)	Temperature, F.°	Relative Humidity.	Vapor Pressure. (Inch.)	Wind. Direction.	Wind. Velocity. (Miles.)	Pressure. (Inch.)	Temp'ature. F.°	Relative Humidity.	Vapor Pressure. (Inch.)	Wind. Direction.	Wind. Velocity. (Miles.)	Direction.	Velocity. (Miles.)	Direction.	Velocity. (Miles.)
7:00	.656	55.9	94	.40	E	7.3	..	..	..	..	..	..	..	..	..	..
7:15	.664	56.8	94	.43	NE	7.3	..	..	..	..	..	..	..	..	..	..
7:30	.678	58.0	90	.43	E	4.0	..	..	..	..	..	..	..	..	..	..
7:45	.684	60.8	81	.43	E	10.9	..	..	..	..	..	..	..	..	..	..
8:00	.687	63.0	77	.43	E	21.2	.000	.0	0	.00	..	.0	..	+1.2	E	1.2
8:15	.693	62.6	78	.43	E	14.6	+.004	— .4	+ 1	.00	..	—6.9	..	—5.4	W	5.4
8:30	.696	61.9	80	.44	E	20.7	+.006	—1.1	+ 3	+.01	..	—1.1	..	+ .7	E	.7
8:45	.696	60.2	84	.44	E	19.1	+.004	—2.8	+ 7	+.01	..	—3.0	..	— .9	W	.9
9:00	.692	59.3	85	.43	E	19.1	—.001	—3.7	+ 8	+.01	..	—3.3	..	— .9	W	.9
9:15	.694	58.7	85	.43	ENE*	24.6	—.001	—4.3	+ 8	+.01	..	+1.9	..	+4.6	NE	4.6
9:30	.694	59.1	82	.42	ENE*	24.5	—.002	—3.9	+ 5	.00	..	+1.5	..	+4.5	NE	4.5
9:45	.696	60.2	80	.42	E	17.0	—.002	—2.8	+ 3	.00	..	—6.3	..	—3.0	W	3.0
10:00	.696	61.9	77	.42	E	15.3	—.003	—1.1	+ 1	.00	..	—8.3	..	—4.7	W	4.7
10:08	..	63.2	74	.42	E	..	..	+0.2	— 2	.00	..	..	..	..	..	..
10:15	.700	62.2	76	.42	E	23.9	+.000	—0.8	0	.00	..	.0	..	+3.9	E	3.9
10:30	.704	61.7	76	.42	E	18.2	..	..	..	..	..	..	..	..	..	..
10:45	.710	61.0	77	.41	E	15.9	..	..	..	..	..	..	..	..	..	..
11:00	.714	60.7	76	.40	NE	18.6	..	..	..	..	..	..	..	..	..	..

*Oscillating between E. and N. E.

Note. Generally clear during the eclipse, some ci.-cu. and ci.; fine about 7 A. M.; at 8 A. M. sky about 0.3 covered with ci. and ci.-cu. moving from west, velocity moderate. The values given in the Table were taken from instruments recording photographically and from an anemograph recording miles and directions to eight points by means of dots. The instruments were checked by eye readings at 10 A. M.

TABLE V.

ITHACA, N. Y. Lat. 42° 27′ N.; Long. 76° 29′ W.

ROBERT G. ALLEN, *Director*.*

Eclipse began 7:47 A. M.; Maximum 8:56 A. M.; Ended 10:20 A. M. (approximate times).

Observations.						Departures of Observed Values from an Interpolated Uniform Change During Eclipse.					Departures of Observed from Mean Wind.		Eclipse Wind.	
Time of 75th Meridian.	Temperature, F.	Relative Humidity.	Vapor Pressure. (Inch.)	Wind. Direction.	Wind. Velocity. (Miles.)	Temperature, F.	Relative Humidity.	Vapor Pressure. (Inch.)	Wind. Direction.	Wind. Velocity. (Miles.)	Direction.	Velocity. (Miles.)	Direction.	Velocity. (Miles.)
A. M. 7:45	..	66	..	SE	5	..	0	..	..	0	..	+2	S 18° E	2.5
8:00	62.8	63	.36	SE	2	— .8	0	.00	..	—3	..	—1	S 81° W	1.3
8:15	..	61	..	SE	2	..	0	..	..	—3	..	—1	S 81° W	1.3
8:30	..	59	..	SE	2	..	—1	..	..	—3	..	—1	S 81° W	1.3
8:40	..	..	..	E	..	..	..	..	..	..	..	..	..	..
8:45	65.0	55	.35	E	1	.0	—4	—.01	..	—3	..	—2	N 34° W	2.1
8:50	65.0	..	..	SE	..	— .2	..	..	..	..	..	..	..	..
8:55	64.7	..	..	SE	..	— .5	..	..	..	..	..	..	..	..
9:00	64.4	58	.35	SE	2	—1.2	0	—.01	..	—2	..	—2	S 81° W	1.3
9:05	64.0	..	..	SE	..	—1.4	..	..	..	..	..	..	..	..
9:10	63.8	..	..	SE	..	—2.1	..	..	..	..	..	..	..	..
9:15	63.8	63	.37	SE	4	—2.3	+6	+.01	..	+1	..	+1	S 4° E	1.6
9:20	63.6	..	..	SE	..	—2.6	..	..	..	..	..	..	..	..
9:25	63.9	..	..	E	..	—2.5	..	..	..	..	..	..	..	..
9:30	63.8	62	.37	E	4	—2.7	+6	+.01	..	+1	..	+1	N 50° E	1.7
9:35	64.2	..	..	E	..	—2.5	..	..	..	..	..	..	..	..
9:40	64.7	..	..	E	..	—2.1	..	..	..	..	..	..	..	..
9:45	(65.0)	59	.35	E	4	—1.6	+4	—.01	..	+1	..	+1	N 50° E	1.7
9:50	66.0	..	..	E	..	—1.1	..	..	..	..	..	..	..	..
10:00	..	56	..	E	3	..	..	..	..	0	..	0	N 9° E	1.1
10:20	68.2	53	.36	E	3	.0	0	.00	..	0	..	0	N 9° E	1.1

* Cornell University in coöperation with U. S. Weather Bureau.

NOTE. The disc of the sun was plainly visible throughout the eclipse, but radiation was diminished by a veil of cirrus cloud at intervals. The temperature was from eye observations. The relative humidity was taken from a hygrograph checked by eye observations. The wind was taken from an anemograph, recording the movement in miles by means of dashes, and the directions to eight points of the compass.

TABLE VI.

BLUE HILL METEOROLOGICAL OBSERVATORY. Lat. 42° 13′ N.; Long. 71° 7′ W.

A. E. SWEETLAND, *Observer.*

Eclipse began 7:53 A. M.; Maximum 9:07 A. M.: Ended 10:32 A. M.

Observations.							Departures of Observed Values from an Interpolated Uniform Change During Eclipse.						Departures of Observed from Mean Wind.		Eclipse Wind.	
Time of 75th Mer.	Pressure. (29.+ Inches.)	Temperature, F.°	Relative Humidity.	Vapor Pressure. (Inch.)	Wind. Direction. E. of N.	Wind. Velocity. (Miles.)	Pressure. (Inch.)	Tempe'ture, F°	Relative Humidity.	Vapor Pressure. (Inch.)	Wind. Direction.	Wind. Velocity. (Miles.)	Direction.	Velocity. (Miles.)	Direction.	Velocity. (Miles.)
A. M.					°						°		°			
7:00	.502	44.6	86	.26	62	20.4	..	..	..	..	..	..	..	..	..	..
7:30	.508	45.1	86	.26	55	21.7	—.005	..	..	..	..	..	..	..	N 80° E	2.3
7:45	.521	44.9	86	.26	54	21.9	.000	.0	0	.00	+2	— .1	+2	+2.3	N 71° E	2.4
8:00	.532	44.9	87	.26	51	21.9	+.001	— .1	+1	.00	0	+ .1	—1	+2.3	N 42° E	2.3
8:15	.536	45.0	85	.26	50	21.7	+.001	— .2	0	.00	—1	+ .2	—2	+2.1	N 32° E	2.2
8:30	.539	45.0	85	.26	50	20.8	.000	— .3	+1	.00	—1	— .4	—2	+1.2	N 21° E	1.4
8:45	.545	44.7	86	.26	50	19.5	+.002	— .7	+3	.00	0	—1.5	—2	— .1	N 47° W	.7
9:00	.548	44.0	86	.25	49	17.9	.000	—1.5	+3	.00	—1	—2.8	—3	—1.7	S 80° W	2.0
9:15	.545	43.9	86	.25	51	18.1	—.007	—1.7	+4	.00	+1	—2.4	—1	—1.5	S 64° W	1.5
9:30	.547	44.0	85	.25	55	18.6	—.010	—1.7	+4	.00	+6	—1.4	+3	—1.0	S 9° W	1.4
9:45	.550	44.0	87	.26	57	19.0	—.011	—1.9	+6	+.01	+8	— .8	+5	— .6	S 16° E	1.8
10:00	.559	44.6	87	.25	54	18.8	—.006	—1.4	+6	.00	+5	— .7	+2	— .8	S 13° W	1.0
10:15	.567	45.1	83	.25	52	18.8	—.002	—1.1	—3	.00	+4	— .5	0	— .8	S 52° W	.8
10:30	.574	46.2	79	.25	48	19.0	.000	.0	0	.00	0	.0	—4	— .6	N 64° W	1.5
10:45	.575	46.0	79	.25	46	19.5	+.003	..	..	..	..	..	..	..	N 44° W	1.9
11:00	.582	45.9	79	.25	45	19.5	.000	..	..	..	..	..	..	..	N 44° W	2.3

Note. The sky was covered with dense nimbus clouds during most of the eclipse, and a light sprinkle of rain fell from 9:41 to 9:55 A. M. The temperature and humidity were from eye observations. The air pressure was read from a mercurial barograph of the Draper pattern. The wind direction was taken from a Draper anemoscope, and the wind velocity from a Richard anemo-cinemograph.

TABLE VII.

NEW YORK METEOROLOGICAL OBSERVATORY. Lat. 40° 46′ N.; Long. 73° 58′ W.

DANIEL DRAPER, *Director.*

Eclipse began 7:47 A. M.; Maximum 9:03 A. M.; Ended 10:26 A. M. (approximate times).

Observations.						Departures of Observed Values from an Interpolated Uniform Change During Eclipse.					Departures of Observed from Mean Wind.		Eclipse Wind.	
Time of 75th Mer.	Temperature, F.°	Rel. Hum.	Vapor Pressure. (Inch.)	Wind. Direction.	Wind. Veloc. (Miles.)	Temperature, F.°	Rel. Hum.	Vapor Pressure. (Inch.)	Wind. Direction.	Wind. Veloc. (Miles.)	Direction.	Veloc. (Miles.)	Direction.	Veloc. (Miles.)
A. M.									°					
7:45	54.7	89	.39	N 43° E	16	.0	0	.00	0	0	—10	+3	N 12° E	3.9
8:00	54.9	90	.39	N 44° E	13	— .1	+1	.00	0	—2	— 9	0	N 41° W	2.1
8:15	54.4	92	.39	N 45° E	16	— .9	+4	.00	+1	+1	— 8	+3	N 17° E	3.6
8:30	54.3	92	.39	N 47° E	17	—1.3	+4	.00	0	+3	— 6	+4	N 29° E	4.2
8:45	54.2	93	.39	N 52° E	15	—1.7	+5	.00	+3	+1	— 1	+2	N 46° E	2.0
9:00	54.0	92	.37	N 55° E	12	—2.2	+5	—.02	+5	—1	+ 2	—1	S 37° W	1.0
9:15	54.0	94	.39	N 58° E	13	—2.5	+7	.00	+6	0	+ 3	0	S 32° E	1.1
9:30	53.9	92	.37	N 59° E	12	—2.9	+6	—.03	+6	0	+ 6	—1	S 6° W	1.7
9:45	54.1	92	.37	N 60° E	11	—3.0	+6	—.03	+5	—1	+ 7	—2	S 21° W	2.5
10:00	54.2	90	.37	N 60° E	11	—3.2	+4	—.03	+4	0	+ 7	—2	S 21° W	2.5
10:15	57.0	87	.40	N 59° E	9	— .3	+2	.00	+1	—1	+ 6	—4	S 42° W	4.1
10:30	58.0	85	.40	N 59° E	10	.0	0	.00	0	0	+ 6	—3	S 36° W	3.2

NOTE. Heavy nimbus clouds covered the sky and obscured the sun during the eclipse. The temperature, humidity, wind direction, and wind velocity were taken from recording instruments, all of the Draper pattern.

TABLE VIII.

Bayonne, N. J. Observations by W. A. Eddy.							Montreal, Can. C. H. McLeod.			Providence, R. I. Otis F. Clapp.				Centerville, Va. Otto B. Cole.		
Time of 75th Mer.	Pressure. (30.+ Inch.)	Temperature, F.°	Relative Humidity.	Vapor Pressure. (Inch.)	Wind. Direction.	Wind. Estimated Veloc. (Miles.)	Time, 75th Mer. A. M.	Temperature, F.°	Temperature Dep't, F.°	Time, 75th Mer. A. M.	Temperature, F.°	Temperature Dep't, F.°	Wind Direction.	Time, 75th Mer. A. M.	Temperature, F.°	Wind Direction.
A. M.																
7:50	.60	58	83	.40	NE	40	8:00	54.8	.0	8:00	50.5	.0	NE	6:30	..	SE
..	..	..	..	..	..	..	8:15	55.9	+ .6	8:15	50.3	— .3	NE	7:30	..	SE
..	..	..	..	..	..	..	8:30	56.0	+ .2	8:30	50.5	— .3	NE	8:00	70	SE to S
8:45	.60	55	94	.40	NE	40	8:45	56.0	— .2	8:45	50.8	— .2	NE	8:30	68	..
9:05	.65	55	94	.40	NE	40	9:00	56.0	— .7	9:00	51.2	.0	NE	8:38	67	SE
9:10	.65	55	94	.41	NE	40	9:15	55.9	—1.2	9:15	50.7	— .6	NE	8:45	66	SE
9:35	.69	56	94	.42	NE	28	9:30	55.7	—1.8	9:30	50.5	—1.0	NE	8:50	65.5	SE
..	..	..	..	..	..	..	9:45	56.1	—1.8	9:45	50.3	—1.3	NE	8:55	64	SE to S
10:00	.69	57	88	.42	NE	15	10:00	56.8	—1.5	10:00	50.2	—1.6	NE	9:00	63	SSE
..	..	..	..	..	..	..	10:15	58.1	— .2	10:15	51.5	— .4	NE	9:10	64	S
10:28	.70	58	89	.43	NE	12	10:30	59.1	.0	10:30	52.1	.0	NE	9:30	68	SSE

NOTE. Heavy strato-cumulus and nimbus clouds covered the regions in which these observations were taken, except at Centerville.

TABLE IX.

BELEN COLLEGE, HAVANA, CUBA. Lat. 23° 8′ N.; Long. 76° 35′ W.

LORENZO GANGOITI, S. J., *Director*.

Eclipse began 7:25 A. M.; Maximum 8:32 A. M.; Ended 9:46 A. M. (approximate times).

Observations.							Departures of Observed Values from an Interpolated Uniform Change During Eclipse.					Departure of Observed from Mean Wind Velocity.		Eclipse Wind.	
Time of 75th Mer.	Temperature, F.°	Rel. Hum.	Vapor. Press. (Inch.)	Wind. Direction.	Wind. Velocity. Meters.	Wind. Velocity. Miles.	Temperature, F.°	Rel. Hum.	Vapor Press. (Inch.)	Wind. Direction. °	Wind. Veloc. (Miles.)	5 Year Mean for May.	Dep't of Obs.	Direction.	Velocity. (Miles.)
A. M.															
7:00	77.7	93	.90	ENE	.8	1.8	..	..	..	..	..	5.6	—3.8	S 64°W	3.7
7:15	78.1	92	.90	ENE	1.8	4.0	..	..	..	..	..	6.0	—2.0	S 59°W	2.0
7:30	78.4	92	.90	ENE	3.8	8.5	— .1	0	.00	+ 3	+ 2.4	6.5	+2.0	N 78° E	2.0
7:45	78.6	92	.90	ENE	3.1	6.9	— .5	+2	.00	+ 2	+ .1	6.9	.0	S 28° E	.3
8:00	79.0	90	.90	NE	4.2	9.4	— .7	+3	.00	—22	+ 2.0	7.2	+2.2	N 2° E	3.6
8:15	79.2	89	.90	ENE	2.8	6.3	—1.1	+4	+.01	+ 2	— 1.8	7.4	—1.1	S 50°W	1.1
8:30	79.3	89	.90	ENE	3.1	6.9	—1.7	+4	+.01	+ 3	— 1.8	7.6	— .7	S 40°W	.7
8:45	80.2	87	.90	ENE	2.9	6.5	—1.4	0	+.01	+ 2	— 2.9	7.8	—1.3	S 52°W	1.3
9:00	81.7	81	.90	ENE	4.8	10.7	— .5	0	.00	+ 3	+ .7	8.1	+2.6	N 76° E	2.6
9:15	82.6	79	.89	ENE	4.5	10.1	— .2	0	.00	+ 2	+ .6	8.3	+1.8	N 80° E	1.8
9:30	83.5	78	.89	ENE	6.4	14.3	+ .1	0	.00	+ 3	+ 3.0	8.5	+5.8	N 72° E	5.8
9:45	84.0	76	.89	ENE	5.1	11.4	.0	0	.00	+ 2	— .5	8.7	+2.7	N 76° E	2.7
10:00	84.7	74	.87	ENE	6.2	13.9	..	..	..	..	..	8.8	+5.1	N 88° E	5.1
10:15	84.7	74	.87	NE	4.3	9.6	..	..	..	..	..	8.9	+ .7	N 23°W	3.3

NOTE. The observations were taken from a Secchi meteorograph. The eclipse wind was computed from the departures of the observed from the mean diurnal wind velocity, the mean direction of the wind being assumed as N. 65° E.

TABLE X.

ECLIPSE WINDS.

Smoothed by formula $\frac{a + 2b + c}{4}$.

Time, 75th Meridian, A. M.	Washington, Ga.		Wadesboro, N. C.		Blue Hill, Mass.		New York, N. Y.		Ithaca, N. Y.		Toronto, Can.		Havana, Cuba.	
	Direction.	Velocity. (Miles.)	Direction.	Velocity. (Miles.)	Direction.	Veloc (Miles.)	Direction.	Velocity. (Miles.)	Direction.	Velocity. (Miles.)	Direction.	Velocity. (Miles.)	Direction.	Velocity. (Miles.)
7:15	..	..	N 8°W	.5	..	..	..	..	..	..	..	..	S 55°W	1.4
7:30	..	..	N84° E	.6	..	..	..	..	..	..	..	..	S 77° E	.6
7:45	N73°W	.5	S 54° E	.3	N67° E	2.3	..	..	..	..	..	..	N34° E	1.1
8:00	N65°W	1.3	S 17°W	.4	N47° E	2.2	N 6°W	2.6	S 44°W	1.1	..	..	N 4°W	1.6
8:15	N67°W	1.0	N57°W	.4	N33° E	2.0	N 9° E	3.1	S 81°W	1.3	W	2.2	N50°W	.7
8:30	N62° E	.5	N40°W	1.0	N19° E	1.3	N27° E	3.3	N79°W	1.3	W	1.2	S 46°W	.9
8:45	N70° E	2.1	N21° E	.4	N53°W	.8	N38° E	1.8	N59°W	1.5	W	.5	S 1° E	.3
9:00	N70° E	2.4	N86° E	.9	S 82°W	1.5	S 35° E	.4	S 85°W	.9	N	.8	N81° E	1.5
9:15	N37° E	.8	S 46° E	.8	S 57°W	1.4	S 6° E	1.1	S 7° E	.6	NE	3.4	N75° E	3.0
9:30	N89°W	1.7	S 37°W	.8	S 14°W	1.3	S 5°W	1.7	N69° E	1.1	NE	2.8	N74° E	4.0
9:45	..	..	N79°W	1.6	S 5° E	1.4	S 17°W	2.3	N44° E	1.5	WNW	2.1	N79° E	4.0
10:00	..	..	N61°W	1.6	S 10°W	1.0	S 28°W	2.8	N22° E	1.2	W	2.1	N72° E	3.1
10:15	..	..	N45°W	1.1	S 66°W	.8	S 36°W	3.5	..	..	..	..	..	..
10:30	..	..	..	..	N64°W	1.3	..	..	..	..	..	..	..	..

NOTE. In obtaining these smoothed means only the observed values at 15-minute intervals were used. At Wadesboro observations at 7:00 A. M. and 8:30 A. M. were missing, and the values at 7:05 A. M. and 8:25 A. M., respectively, were used instead. The heavy line through the middle of each series indicates the maximum of the eclipse, or totality.

TABLE XI.

ECLIPSE CONDITIONS.

MEANS OF STATIONS SIMILARLY SITUATED.

	Mean of Washington and Wadesboro.						Mean of Ithaca and Toronto.				Ithaca and Blue Hill.*		
	Minutes.	Temperature, F.°	Relative Humidity.	Vapor Pressure. (Inch.)	Wind. Direction.	Wind. Veloc. (Miles.)	Minutes.	Temperature.	Relative Humidity.	Vapor Pressure. (Inch.)	Minutes.	Wind. Direction.	Wind. Veloc. (Miles.)
Before.	74	.0	0	.00	N 84° E	.6	70	.0	0	.00	69	N 47° E	2.2
	59	+ .3	0	.00	N 89° W	.1	55	— .4	0	.00	54	N 21° E	.5
	44	— .2	+ 1	.00	N 82° W	.7	40	— .4	0	.00	39	N 39° W	.7
	29	—1.4	+ 4	+.01	N 62° W	.7	25	—1.1	0	.00	24	N 83° W	1.0
	14	—3.8	+10	+.02	N 11° W	.5	10	—1.5	+2	+.01	9	N 78° W	1.4
Maximum.	1	—5.9	+15	+.04	N 62° E	1.2	5	—2.9	+4	+.01	6	S 68° W	1.1
	16	—7.0	+23	+.06	N 74° E	1.6	20	—3.3	+7	.00	21	S 6° W	1.0
	31	—4.3	+15	+.05	N 84° E	.6	35	—3.3	+6	.00	36	S 48° E	.8
After.	46	—2.3	+ 5	+.02	S 74° W	1.1	50	—2.2	+4	.00	51	N 86° E	.5
	61	—1.5	+ 2	+.01	N 79° W	1.6	65	—1.1	+2	.00	66	N 21° W	.4
	71	— .3	0	.00	N 61° W	1.6	80	— .4	0	.00	81	N 64° W	1.3

* The results at Ithaca are combined with those of Blue Hill 15 minutes later, because the interval between the maximum of the eclipse at the two places is about 11 minutes. In obtaining these averages of the winds the data were taken from the table above.

TABLE XII.

OBSERVED CHANGES OF PRESSURE DURING TOTAL ECLIPSES.

RUSSIA. Aug. 19, 1887.				CALIFORNIA, U. S. A. Jan. 1, 1889.						CHILE. April 16, 1893.					Ga., U. S. A. May 28, 1900.		MEAN.
Eclipse began 6h. 5m. Eclipse total 7h. 3m. Eclipse ended 8h. 6m.				Eclipse began 12h. 24m. Eclipse total 1h. 49m. Eclipse ended 3h. 8m.						Eclipse began 7h. 15m. Eclipse total 8h. 21m. Eclipse ended 9h. 22m.					Began 7h. 2m. Total 8h. 10m. Ended 9h. 28m.		
Local Time. A. M.	Pressure. 29.+ (In.)	Interp. Uniform Change. 29.+ (In.)	Eclipse Pressure. (Inch.)	Local Time. P. M.	Pressure. (In.) 30.0+	Norm. Pres. (In.) 30.0+	Difference. (Thous'ths.)	Uniform Change.	Eclipse Pressure. (Inch.)	Local Time. A. M.	Pressure. (In.) 26.3+	Norm. Pres. (In.) 26.3+	Difference. (Thous'ths.)	Eclipse Pressure (Inch.)	Local Time. A. M.	Eclipse Pressure. (Inch.)	Eclipse Pressure. (Inch.)
5:13	198	..	..	12:15	92	46	46	46	.000	6:45	56	65	9	+.002	6:35	..	..
5:33	194	194	.000	12:20	86	42	44	46	—.002	6:50	59	67	8	+.001	6:40	..	.000
5:38	194	194	.000	12:25	84	39	45	46	—.001	6:55	61	70	9	+.002	6:45	..	+.001
5:43	199	195	+ .004	12:30	82	36	46	46	.000	7:00	63	72	9	+.002	6:50	..	+.002
5:48	..	196	+(.004)	12:35	78	34	44	46	—.002	7:05	65	73	8	+.001	6:55	..	+.001
5:53	200	196	+ .004	12:40	78	32	46	46	.000	7:10	67	75	8	+.001	7:00	..	+.002
5:58	201	197	+ .004	12:45	78	30	48	46	+.002	7:15	68	76	8	+.001	7:05	(.000)	+.002
6:03	198	198	.000	12:50	76	29	47	46	+.001	7:20	71	77	6	—.001	7:10	— .001	.000
6:08	197	198	— .001	12:55	72	27	45	46	—.001	7:25	74	78	4	—.003	7:15	—(.001)	—.001
6:13	197	199	— .002	1:00	71	26	45	46	—.001	7:30	76	80	4	—.003	7:20	— .002	—.002
6:18	200	200	.000	1:05	66	24	42	46	—.004	7:35	77	82	5	—.002	7:25	—(.002)	—.002
6:23	201	201	.000	1:10	67	22	45	46	—.001	7:40	77	84	7	.000	7:30	— .002	—.001
6:28	199	202	— .003	1:15	65	20	45	46	—.001	7:45	78	85	7	.000	7:35	—(.002)	—.002
6:33	199	202	— .003	1:20	63	18	45	46	—.001	7:50	79	83	4	—.003	7:40	— .003	—.003
6:38	203	203	.000	1:25	61	16	45	45	.000	7:55	81	83	2	—.005	7:45	—(.003)	—.002
6:43	202	204	— .002	1:30	60	15	45	45	.000	8:00	82	89	7	.000	7:50	— .002	—.001
6:48	207	205	+ .002	1:35	60	16	44	45	—.001	8:05	83	91	8	+.001	7:55	—(.002)	.000
6:53	207	205	+ .002	1:40	57	17	40	45	—.005	8:10	83	91	8	+.001	8:00	— .003	—.001
6:58	..	206	+(.002)	1:45	60	18	42	45	—.003	8:15	84	91	7	.000	8:05	—(.003)	—.001
7:03	..	207	+(.001)	1:50	60	17	43	45	—.002	8:20	84	92	8	+.001	8:10	—(.003)	—.001
7:08	208	207	+ .001	1:55	59	17	42	45	—.003	8:25	85	92	7	.000	8:15	—(.003)	—.001
7:13	206	208	— .002	2:00	56	17	39	45	—.006	8:30	85	92	7	.000	8:20	— .003	—.003
7:18	207	209	— .002	2:05	54	18	36	45	—.009	8:35	86	92	6	—.001	8:25	—(.003)	—.004
7:23	205	210	— .005	2:10	54	18	36	45	—.009	8:40	86	91	5	—.002	8:30	— .003	—.005
7:28	205	210	— .005	2:15	57	19	38	45	—.007	8:45	87	90	3	—.004	8:35	—(.004)	—.005
7:33	207	211	— .004	2:20	57	18	39	45	—.006	8:50	88	91	3	—.004	8:40	— .004	—.005
7:38	209	212	— .003	2:25	58	17	41	45	—.004	8:55	90	94	4	—.003	8:45	—(.004)	—.004
7:43	211	212	— .001	2:30	60	16	44	45	—.001	9:00	91	95	4	—.003	8:50	— .004	—.002
7:48	..	213	—(.003)	2:35	56	15	41	44	—.003	9:05	92	97	5	—.002	8:55	—(.003)	—.003
7:53	210	214	— .004	2:40	58	15	43	44	—.001	9:10	93	98	5	—.002	9:00	— .001	—.002
7:58	211	214	— .003	2:45	58	14	44	44	.000	9:15	94	100	6	—.001	9:05	—(.001)	—.001
8:03	215	215	.000	2:50	60	16	44	44	.000	9:20	95	101	6	—.001	9:10	— .001	—.001
8:08	216	216	.000	2:55	62	17	45	44	+.001	9:25	95	102	7	.000	9:15	—(.001)	.000
8:13	220	217	+ .003	3:00	61	18	43	44	—.001	9:30	96	102	6	—.001	9:20	— .001	.000
8:18	219	217	+ .002	3:05	62	18	44	44	.000	9:35	96	102	6	—.001	9:25	(.000)	.000
8:23	215	218	— .003	3:10	63	17	46	44	+.002	9:40	97	101	4	—.003	9:30	.000	—.001
8:28	214	219	— .005	3:15	62	17	45	44	+.001	9:45	97	100	3	—.004	9:35	..	—.002
8:33	215	219	— .004	3:20	63	16	47	44	+.003	9:50	..	..	..	..	9:40	..	..

Note. The horizontal light lines mark the beginning and ending of the partial phases and the heavy lines enclose the times of totality. Values in parentheses are interpolated.

TABLE XIII.

MEAN PRESSURE DEPARTURES AT 23 STATIONS IN RUSSIA IN THE PATH OF THE TOTAL ECLIPSE ON AUG. 19, 1887.

MINUTES...	165	135	105	95	85	75	65	55	45	35	25	15	5	0
Obs. mm.	+.24	+.20	+.15	..	..	+.10	+.08	+.08	+.06	+.06	+.04	+.02	+.03	.00
Interp. " .	+.14	+.12	+.10	+.10	+.09	+.09	+.08	+.08	+.07	+.07	+.06	+.06	+.05	+.05
Diff. " .	+.10	+.08	+.05	..	..	+.01	.00	.00	—.01	—.01	—.02	—.04	—.02	—.05
" inches.	+.004	+.003	+.002	..	...	.000	.000	.000	.000	.000	—.001	—.002	—.001	—.002
MINUTES...	0	5	15	25	35	45	55	65	75	85	95	105	135	165
Obs. mm.	.00	+.01	+.01	—.02	—.01	+.06	+.05	+.02	—.01	+.01	+.06	+.05	—.04	—.08
Interp. " .	+.05	+.05	+.04	+.04	+.03	+.03	+.02	+.02	+.01	+.01	.00	.00	—.02	—.04
Diff. " .	—.05	—.04	—.03	—.06	—.04	+.03	+.03	.00	—.02	.00	+.06	+.05	—.03	—.04
" inches.	—.002	—.002	—.001	—.002	—.002	+.001	+.001	.000	—.001	.000	+.002	+.002	—.001	—.002

NOTE. The middle of totality is indicated by 0, and the other figures give the minutes preceding and following this epoch.

TABLE XIV.

DIURNAL DEPARTURES FROM MEAN PRESSURES AT BLUE HILL AND AT KEW IN THOUSANDTHS OF AN INCH OF MERCURY.

	A. M.													P. M.											
HOUR..........	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
January																									
Blue Hill........	6	2	7	5	0	–1	4	12	19	31	31	18	–4	–22	–29	–29	–23	–17	–10	–3	0	3	4	3	2
Kew............	4	–1	0	–2	–7	–11	–10	–5	3	10	15	15	5	–5	–11	–11	–8	–5	–1	3	5	6	6	5	2
Mean.........	5	0	3	1	–3	–6	–3	3	11	20	23	17	0	–13	–20	–20	–16	–11	–5	0	3	5	5	4	0
April and October																									
Blue Hill........	8	3	–3	–6	–3	2	10	18	20	23	20	13	0	–7	–20	–26	–26	–21	–14	–6	2	6	6	6	5
Kew............	8	3	–2	–7	–9	–8	–4	2	7	9	9	7	0	–6	–11	–16	–17	–13	–6	0	8	11	13	12	11
Mean.........	8	3	–2	–6	–6	–3	3	10	13	16	15	10	0	–6	–15	–21	–22	–17	–10	–3	5	8	9	9	8
July																									
Blue Hill........	5	1	–3	–6	–2	4	10	17	18	17	17	12	4	–5	–12	–17	–21	–21	–16	–10	–2	5	5	4	3
Kew............	8	4	0	–4	–4	–2	3	7	9	9	7	6	2	–2	–6	–10	–14	–16	–15	–11	–3	5	10	10	8
Mean.........	7	3	–2	–5	–3	2	6	12	14	13	12	9	3	–4	–9	–13	–18	–19	–16	–10	–3	5	7	7	6

NOTE. Where no algebraic sign is given the departure is plus.

TABLE XV.

VALUES OBTAINED BY COMBINING ASSUMED VALUES OF PRESSURE IN SYMMETRICAL COLD-AIR AND WARM-AIR CYCLONES.

	A. M.													P. M.											
Hour..	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
January																									
Cold-air cyclone ..	0	1	3	3	–2	–6	–6	–2	–2	–6	–6	–2	3	3	1	0	0	0	0	0	0	0	0	0	0
Warm-air cyclone.	3	0	0	0	0	0	3	8	10	10	7	3	–3	–10	–16	–20	–16	–10	–3	3	7	10	10	8	3
Sum	3	1	3	3	–2	–6	–3	6	8	4	1	1	0	–7	–15	–20	–16	–10	–3	3	7	10	10	8	3
April and October																									
Cold-air cyclone ..	3	3	–2	–6	–6	–2	–2	–6	–6	–2	3	3	1	8	0	0	0	0	0	0	0	0	0	1	2
Warm-air cyclone	10	5	0	0	0	0	5	10	12	12	10	5	–2	–10	–17	–22	–22	–17	–10	–2	5	10	12	12	10
Sum	13	8	–2	–6	–6	–2	3	4	6	10	13	8	–1	–10	–17	–22	–22	–17	–10	–2	5	10	12	13	13
July																									
Cold-air cyclone ..	2	2	–3	–5	–3	–1	–3	–5	–3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	1	2
Warm-air cyclone.	10	7	3	0	0	0	0	3	7	10	10	8	4	–3	–10	–15	–18	–18	–15	–10	–3	4	8	10	10
Sum	12	9	0	–5	–3	–1	–3	–2	4	12	12	9	4	–3	–10	–15	–18	–18	–15	–10	–3	4	8	11	12

NOTE. The pressure in this and the following table is given in thousandths of an inch of mercury, and figures with no algebraic sign are plus values.

TABLE XVI.

DIFFERENCES BETWEEN PRESSURES OBSERVED AND ASSUMED SYMMETRICAL DAILY CYCLONES.

	A. M.													P. M.											
Hour............	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
January	2	–1	0	–2	–1	0	0	–3	3	16	22	16	0	–6	–5	0	0	–1	–2	–3	–4	–5	–5	–4	–3
April and October.	–5	–5	0	0	0	–1	0	6	7	6	2	2	1	4	2	1	0	0	0	–1	0	–2	–3	–4	–5
July.............	–5	–6	–2	0	0	1	9	10	10	1	0	0	–1	–1	–1	–2	0	–1	–1	0	0	1	–1	–4	–6

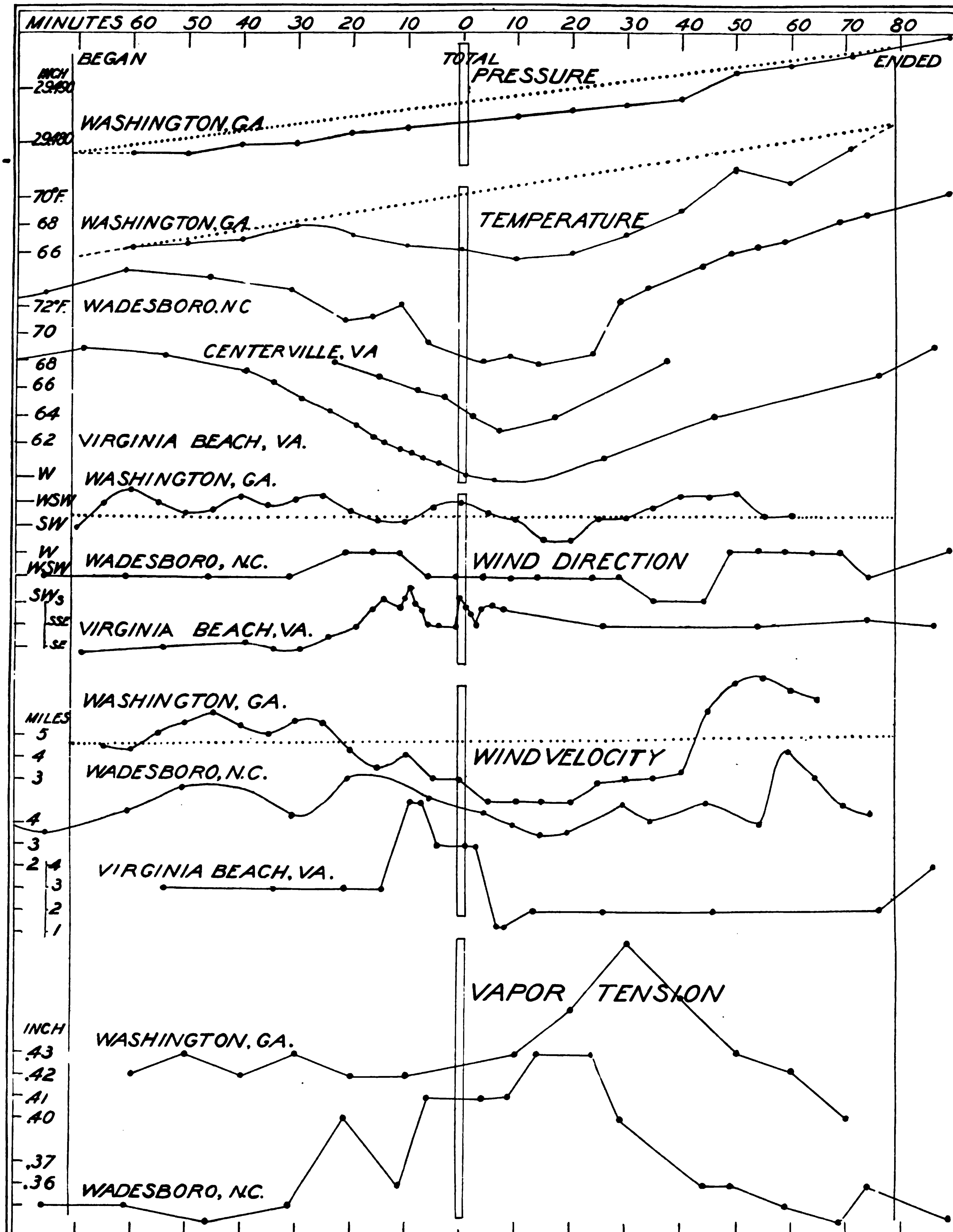

MINUTES 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80
BEGAN
TOTAL
ENDED
PRESSURE
INCH
29.490
29.480
WASHINGTON, GA.
70°F.
68
66
WASHINGTON, GA.
TEMPERATURE
72°F.
70
68
66
64
62
WADESBORO, N.C.
CENTERVILLE, VA.
VIRGINIA BEACH, VA.
W
WSW
SW
WASHINGTON, GA.
W
WSW
SW
S
SSE
SE
WADESBORO, N.C.
WIND DIRECTION
VIRGINIA BEACH, VA.
WASHINGTON, GA.
MILES
5
4
3
4
3
2
1
WADESBORO, N.C.
WIND VELOCITY
VIRGINIA BEACH, VA.
VAPOR TENSION
INCH
.43
.42
.41
.40
.37
.36
WASHINGTON, GA.
WADESBORO, N.C.

PLATE II.

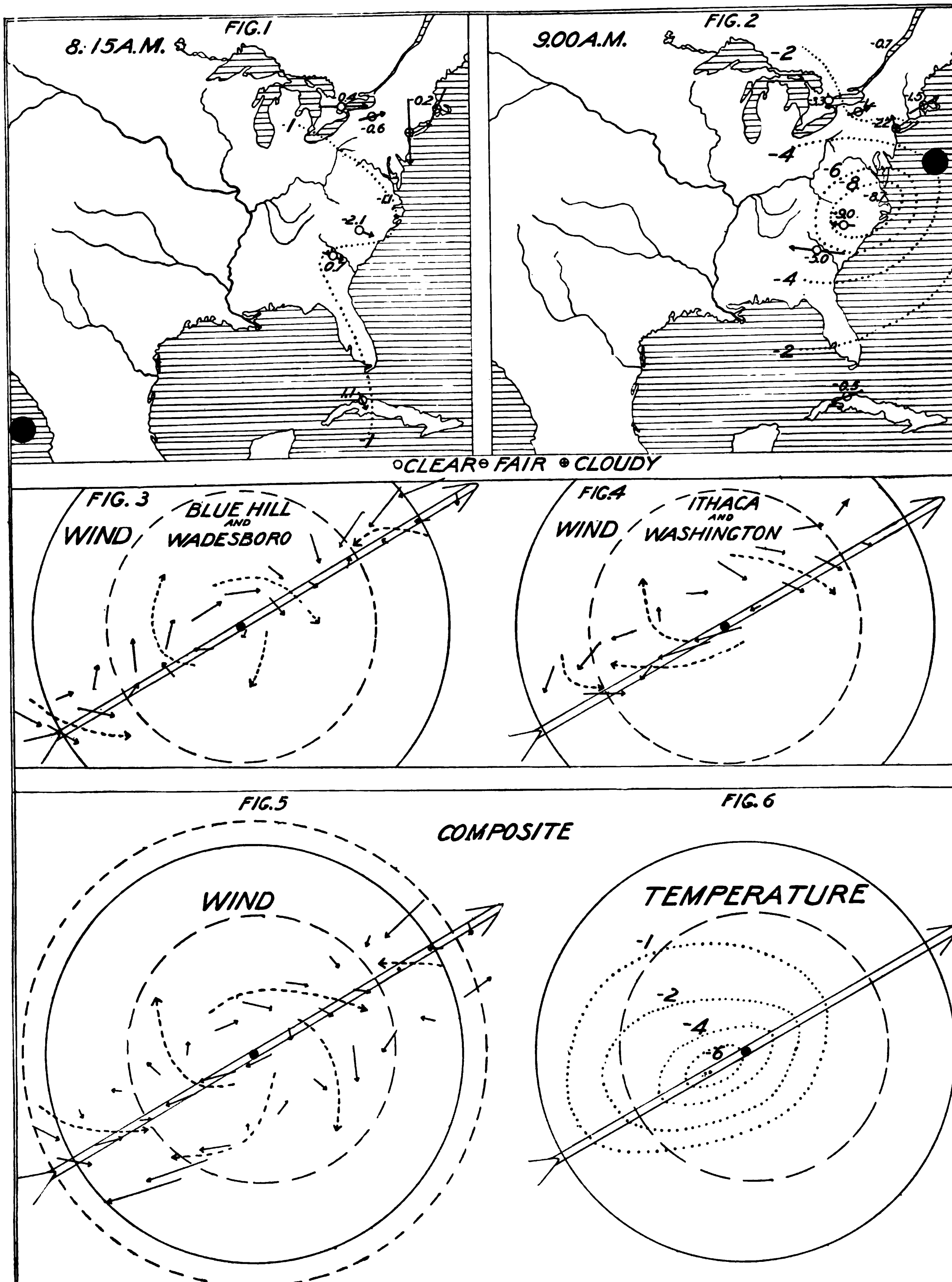
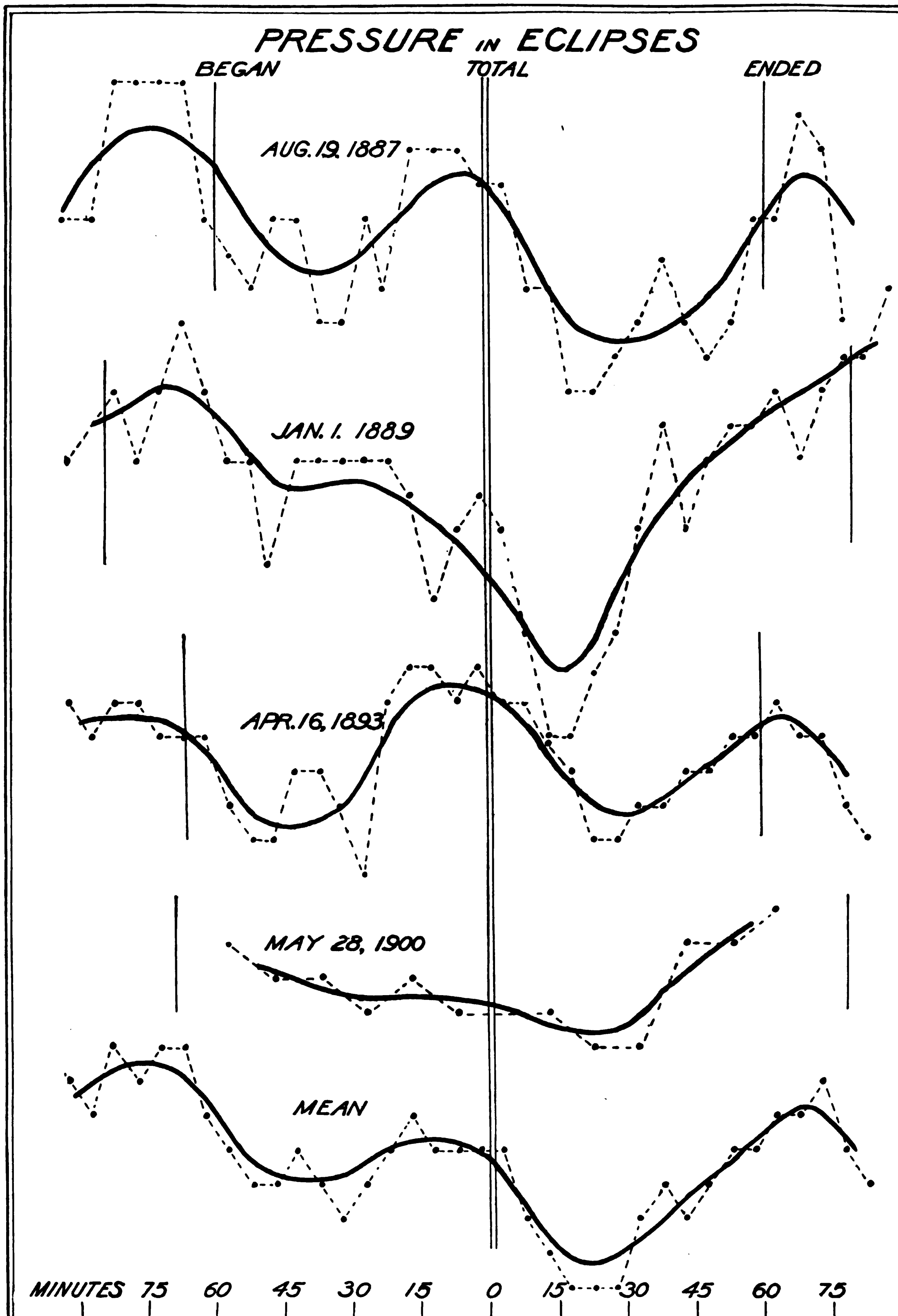
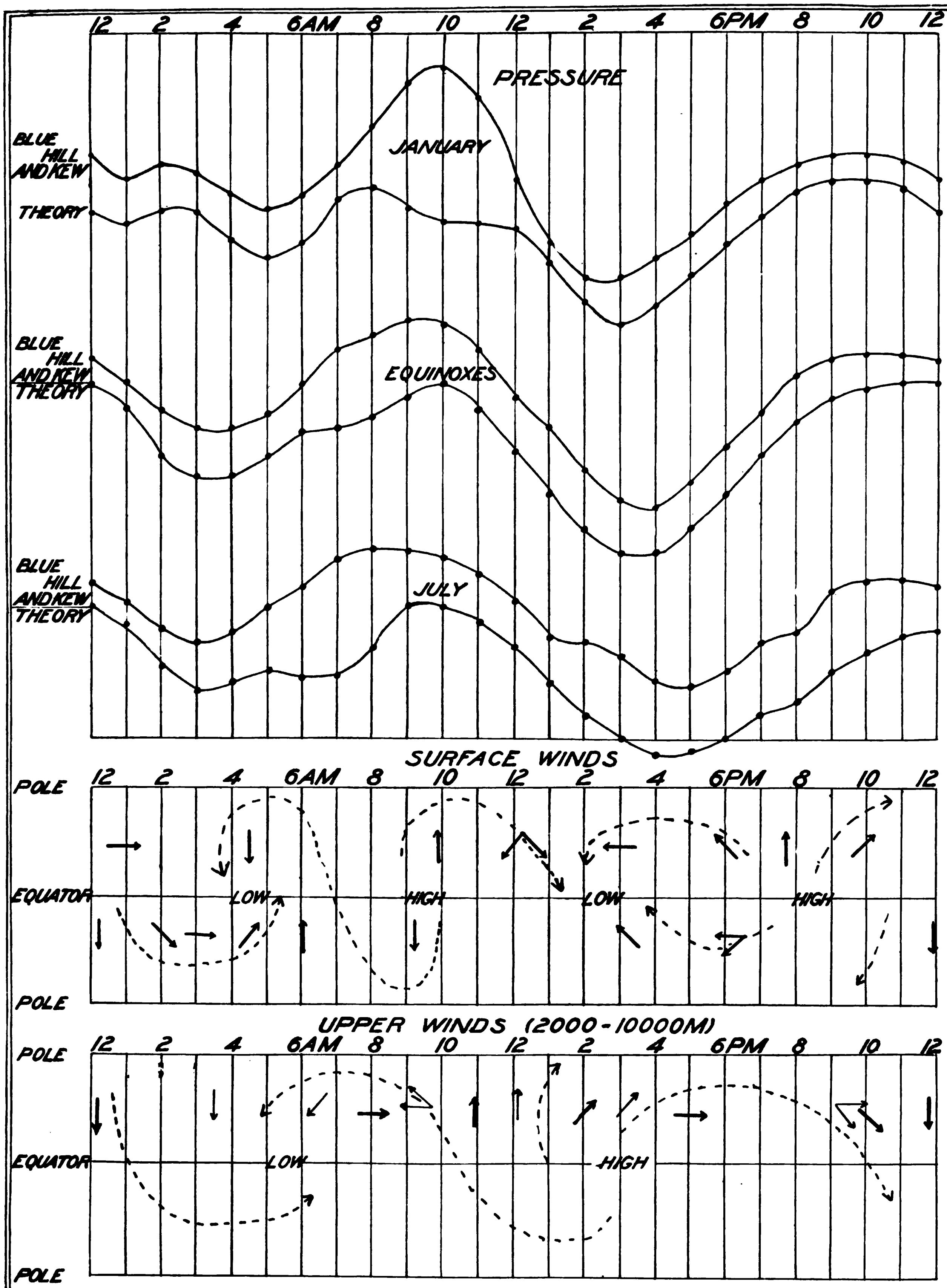


FIG. 1
8:15 A.M.
FIG. 2
9.00 A.M.
CLEAR FAIR CLOUDY
FIG. 3
WIND
BLUE HILL AND WADESBORO
FIG. 4
WIND
ITHACA AND WASHINGTON
FIG. 5
FIG. 6
COMPOSITE
WIND
TEMPERATURE


PRESSURE IN ECLIPSES
BEGAN
TOTAL
ENDED
AUG. 19. 1887
JAN. 1. 1889
APR. 16, 1893
MAY 28, 1900
MEAN
MINUTES 75 60 45 30 15 0 15 30 45 60 75


PRESSURE
12 2 4 6AM 8 10 12 2 4 6PM 8 10 12
BLUE HILL AND KEW
THEORY
JANUARY
EQUINOXES
JULY
SURFACE WINDS
POLE
EQUATOR
LOW
HIGH
UPPER WINDS (2000-10000M)

ANNALS

OF

THE ASTRONOMICAL OBSERVATORY OF HARVARD COLLEGE.

EDWARD C. PICKERING, Director.

VOL. XLIII.—Part II.

OBSERVATIONS AND INVESTIGATIONS

MADE AT THE

BLUE HILL METEOROLOGICAL OBSERVATORY,

MASSACHUSETTS, U.S.A.,

IN THE YEARS

1899 and 1900,

UNDER THE DIRECTION OF

A. LAWRENCE ROTCH.

With Summaries of Observations for the Lustrum, Appendices containing Discussions of the Visibility of Distant Objects during Five Years and of the Temperature in Milton during Fifty Years, a Bibliography, and Errata.

CAMBRIDGE:
PUBLISHED BY THE OBSERVATORY.
1902.

CONTENTS OF PART II.

INTRODUCTION.

THE present publication contains the regular observations made during the years 1899 and 1900, a summary for the lustrum 1896–1900, a discussion by Mr. Sweetland of the visibility of distant objects as affected by meteorological conditions, based on five years' observations, and a discussion by the same author of the temperatures recorded at Milton during the past fifty years. There is added a bibliography of the most important articles relating to the Observatory and its work, published by members of its staff and others during the last five years.

The publication of the occasional Bulletins mentioned in the Introduction to the Observations for 1897 and 1898 was continued, and the following have appeared since that time: — No. 1, 1899. Studies of Cyclonic and Anticyclonic Phenomena with Kites; H. Helm Clayton, 19 pages. No. 2, 1899. Two Remarkable Snow-Storms; A. E. Sweetland, 8 pages. No. 3, 1899. Progress of Experiments with Kites during 1897–1898; S. P. Fergusson, 8 pages. No. 1, 1900. Studies of Cyclonic and Anticyclonic Phenomena with Kites; H. Helm Clayton (Second Memoir), 36 pages. The publication of these Bulletins was discontinued with the last-named, which was the seventh of the series, and future investigations will henceforth appear in these Annals according to the announcement of Professor Pickering in the Preface to the present volume.

Part I of this volume, entitled The Eclipse Cyclone and the Diurnal Cyclones, contains a study by Mr. Clayton of the meteorological observations made by the staff of this Observatory and others during the Total Solar Eclipse of May 28, 1900, as well as of similar observations made by Professor Winslow Upton and the writer during three previous eclipses, and from which it is sought to establish the analogy between the changes in atmospheric pressure observed during total eclipses of the Sun and the daily period occurring in the barometer.

The work of exploring the air with kites at Blue Hill, of which the history and earlier results were published in these Annals, Vol. XLII, Part I, Appendix B, and in the Bulletins before mentioned, will be further described and the recent results discussed in the next Part of this Volume.

The Maintenance and Personnel. — All the expenses of the Observatory continue to be paid by the undersigned, except the greater part of the cost of publishing the observations and investigations in these Annals, which is borne by the Harvard College Observatory.

There has been no change in the staff: the undersigned directs the work; Mr. H. H. Clayton is the meteorologist; Mr. S. P. Fergusson has charge of the instruments, and Mr. A. E. Sweetland attends generally to the observations.

The Stations and Instruments. — Three stations have been maintained, as during previous years. The primary station is the Observatory on the summit of Great Blue Hill; the two secondary stations are situated north-northwest of it, one at the base of Blue Hill, and the other in the Neponset valley. At all the stations, instruments recording graphically are controlled by eye-observations that are made three times a day at the Observatory and once a day at the other stations. Beginning with 1899 a self-recording hygrometer was substituted for the self-recording rain-gauge at the Valley Station. As this station is used as a sea-level station for the observations obtained with kites, the sheets of the thermograph and hygrograph are changed every day as at the Observatory. At the Base Station weekly record-sheets are employed.

The Work of the Observatory. — Apart from the routine observations and automatic records at the three stations, the principal work has been the exploration of the air with kites. In order to study the changes with height at different seasons and in varying weather conditions flights were made about once a month on three or four consecutive days. During 1899 records were obtained from the kite-meteorograph in 25 flights, the average height that it attained above sea-level being 7,400 feet, and the maximum height 12,440 feet. During 1900 there were 24 flights with an average height of 8,450 feet and an extreme height of 15,800 feet. Details of the work will be given in the publication mentioned.

At the suggestion of Mr. S. P. Langley, Secretary of the Smithsonian Institution, experiments were undertaken during the summer of 1899 at the expense of a grant from the Hodgkins Fund to ascertain whether kites might be used advantageously to lift the terminal wires in Marconi's space-telegraphy. After much experimenting, signals were transmitted between a kite elevated about 200 feet above Blue Hill, and the tower of Memorial Hall in Cambridge, distant twelve miles. It was found that a longer wire collected atmospheric electricity to such an amount as to interfere seriously with the action of the coherer, constituting the receiving apparatus. Mr. G. W. Pickard of Boston rendered valuable assistance in these experiments.

A special study was made of the meteorological phenomena attending the Total Eclipse of the Sun on May 28, 1900. Messrs. Clayton, Fergusson, and the writer went to the Southern States to observe it, and the coöperation of other observers was secured. The results have been published as already stated.

The Local Weather Predictions. — Precipitation and cold-wave flags were displayed as heretofore on the tower of the Observatory, according to the United States Weather Bureau local forecasts for twenty-four hours, revised at Blue Hill.

An Explanation of the Tables. — Tables I and VI contain the eye-observations made at the summit at 8 A.M. and 8 P.M., arranged in the international form, recommended by the International Congress of Vienna in 1873. The wind velocity, however, is given, in metres per second, instead of its force on a scale of 0 to 12; and some slight deviations from the Vienna scheme, which are found in the publications of the Prussian, Austrian, or Swiss meteorological bureaus, have been adopted here and in Tables II and VII. Among these are the departures of the means and totals from the normals at the foot of the columns. Following the recommendation of the Paris Conference of 1896, distant thunder and lightning have been noted separately in the Remarks, and in Tables II and VII the days with thunderstorms include only storms in which both thunder and lightning were observed.

Tables II and VII contain summaries for the years, arranged also in the international form, with the data expressed in both English and metric measures. The mean monthly values of atmospheric pressure, air temperature, and relative humidity, are not the simple means of the observations at 8 A.M., but have corrections which are determined from the departures of the means of these hours from the means of the twenty-four hours given in Part II of Vol. XXX. The clear, fair, and cloudy days are determined from the daily mean of the cloudiness each hour, from 7 A.M. to 8 P.M. When the mean cloudiness is between 0 and 2 inclusive, the day is clear; when between 3 and 7 inclusive, fair; and when between 8 and 10 inclusive, cloudy. This method has been followed each year since 1891; previously the clear, fair, and cloudy days were obtained from the daily percentage of possible bright sunshine. The number of hours the wind blew from each of the eight points of the compass, which replace the "number of times observed" in the international form, is removed from its place in Tables II and VII for convenience of printing. The normals for the vapor pressure and for the number of days with gales of fifty or more miles per hour (true wind velocity) are computed only for the years subsequent to 1891.

In the supplementary Tables II and VII are given some additional data regarding sunshine and wind. The percentage of possible bright sunshine is determined from the average possible duration of sunshine in latitude 42°, thirty minutes each day being subtracted to allow for the time when the Sun, on account of its proximity to the horizon, does not affect the cards of the Campbell-Stokes instrument. The wind velocity has been mostly obtained from the Richard anemo-cinemograph.

Tables III and IV, and Tables VIII and IX contain the annual summaries of the Base and Valley Stations. The data for these stations could not be published in the international form, because eye-observations were made but once a day.

Tables V and X contain the record of visibility, for which, during the daytime, towers or similar structures in various azimuths, and in the evening the lights of three light-houses were observed.

There next follows a summary of the observations at the three stations for the lustrum 1896–1900. Table XI is a general summary for the Summit Station, arranged in the international form with metric equivalents for the English measures. Tables XII and XIII are summaries of the observations at the Base and Valley Stations, respectively. This is the first time that such summaries have been published, the form being that of the annual tables. Table XIV shows the advance of the seasons for each year since the beginning of observations in 1886.

The Library. — During the past year a card catalogue of authors and subjects has been prepared by Mr. Clayton. The books, not including volumes of observations and periodicals, number about five hundred and are arranged according to the Dewey system; the pamphlets number about three thousand and are classified by subjects, in boxes in the order of their receipt. There were acquired by exchange or purchase — chiefly the former — 236 books and pamphlets relating to meteorology in 1899, and 300 in 1900. This number does not include separate volumes of sets or about 30 magazines and registers of observations, received monthly or oftener. Correspondents are informed that the address of the Observatory is Hyde Park, Mass., U. S. A.

A. LAWRENCE ROTCH.

BLUE HILL METEOROLOGICAL OBSERVATORY,
June, 1901.

TABLE I.

OBSERVATIONS MADE TWICE DAILY

IN 1899

AT THE BLUE HILL METEOROLOGICAL OBSERVATORY.

LONGITUDE 71° 6′ 53″ W. LATITUDE 42° 12′ 44″ N.

HEIGHT OF BAROMETER ABOVE MEAN TIDE, 640 FEET OR 195.1 METRES.

N. B. — This and the following Table are in the form recommended by the International Meteorological Congress of Vienna in 1873, with modifications subsequently adopted.

Maximum and minimum values are denoted by heavy-faced type.

The barometer is corrected to 32°, but is not reduced to sea level nor to standard gravity.

Maximum and minimum temperatures are for the preceding 24 hours.

The normal vapor pressure is for the years since 1891.

In the cloudiness column the occurrence, at the hour of observation, of rain, is indicated by •, snow or sleet by *, fog by — below the amount of cloud.

Wind velocities, which are true velocities and are expressed in metres per second, are for the five minutes preceding the hour named.

Precipitation is the amount during the preceding 24 hours. Absence of precipitation is denoted by a dot (.), and amounts less than .01 inch are recorded .00.

The international symbols used in the Remarks, and in Table II, are: —

	Rain.	V	Frostwork (Rough).	T	Distant Thunder.
	Snow.		Ice Coating (Smooth).	∞	Haze.
▲	Hail.		Drifting Snow.	⊕	Solar Halo.
△	Sleet.	←	Floating Ice-Crystals.		Solar Corona.
≡	Fog.		Gale.		Lunar Halo.
	Dew.		Thunder and Lightning.		Lunar Corona.
	Hoar Frost.		Distant Lightning.		Rainbow.
	Surrounding country more than half under snow.				Aurora.

The intensity of a phenomenon is denoted by an exponent 0 indicating slight, 2, great, and an absence of exponent, moderate intensity.

In the Remarks the time of occurrence is expressed in hours and tenths; morning and afternoon are indicated by A and P, respectively; midnight and noon by 12 P and 12 M respectively, the hours being counted from 0 to 12, commencing with midnight. The continuance of a phenomenon is indicated by a dash (—).

JANUARY, 1900.

Date.	Atmospheric Pressure. Inches.		Air Temperature, in degrees Fahrenheit.				Vapor Pressure. Inch.		Relative Humidity. Per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in inches.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	28.91	28.63	23	11	26	10	.12	.06	99	75	10✳	0	NE 10	W 14	.54
2	28.88	28.97	10	20	25	7	.05	.07	70	63	0	1	SW 12	SW 13	.00
3	29.24	29.53	11	9	20	9	.06	.04	79	56	6	0	W 7	W 8	.00
4	29.77	29.79	9	21	26	4	.05	.08	75	67	0	0	NW 3	SW 9	.
5	29.65	29.55	29	36	41	20	.11	.15	71	70	9	7	SW 13	W 9	.
6	29.59	29.74	35	28	37	28	.13	.09	68	58	10	0	W 8	NW 8	.
7	29.69	29.33	23	36	39	19	.10	.18	80	87	0	10	SW 7	SW 13	.
8	29.17	29.63	37	14	39	14	.16	.04	73	43	0	0	W 13	NW 13	.11
9	29.79	29.59	5	21	27	4	.03	.09	57	85	0	7	N 7	SW 9	.
10	29.21	29.29	33	33	41	18	.13	.11	75	58	7	0	SW 13	NW 11	.03
11	29.57	29.32	9	28	33	9	.04	.12	63	83	1	10	N 7	E 9	.
12	28.84	28.97	28	33	37	27	.15	.15	100	80	10	9	NW 5	N 9	1.46
13	29.37	29.37	22	24	33	21	.09	.11	75	89	9	10	N 5	NW 3	.00
14	29.32	29.31	21	27	35	20	.09	.15	75	100	0	10✳°	NW 6	SE 6	.15
15	29.54	29.62	28	32	38	27	.15	.15	100	86	8	10	N 5	SE 6	.02
16	29.33	29.47	36	35	42	31	.21	.15	100	72	10	0	S 13	NW 7	.08
17	29.76	29.96	28	24	35	23	.10	.08	62	66	1	10	N 10	E 4	.00
18	29.83	29.63	20	36	37	17	.08	.21	73	98	10	10	N 1	S 5	.
19	29.42	29.29	47	49	55	36	.32	.35	100	100	10	8	SW 8	SW 7	.03
20	29.03	28.54	49	51	56	45	.35	.37	100	100	10●	10	SE 12	SW 11	.44
21	28.76	29.37	29	20	51	19	.11	.05	71	46	8	0	NW 16	NW 8	.12
22	29.44	29.43	27	40	51	18	.09	.16	59	66	3	0	SW 12	SW 7	.
23	29.19	29.17	36	41	52	34	.13	.15	71	59	5	4	SW 11	W 10	.
24	29.57	29.61	11	23	41	11	.04	.11	60	86	3	10	N 9	E 5	.00
25	29.27	28.79	27	32	41	22	.15	.18	100	100	10	10●	NE 3	N 4	.36
26	28.53	28.72	28	8	34	8	.13	.03	86	51	9	6	W 10	W 20	.05
27	29.09	29.49	11	17	23	5	.03	.05	42	50	0	0	W 18	W 9	.
28	29.61	29.37	19	32	38	15	.06	.18	57	100	0	10✳	S 7	E 10	.02
29	28.63	28.88	33	16	46	16	.19	.05	100	59	10●	6	NW 13	W 13	.83
30	29.20	29.11	11	26	29	8	.05	.11	61	76	7	4	SW 5	S 10	.
31	28.91	28.69	29	21	31	21	.15	.08	95	78	10✳°	8✳°	SE 3	W 10	.01
Means	29.294	29.295	24.7	27.2	37.4	18.3	.118	.126	77.3	74.3	5.7	5.5	8.8	9.0	4.25
'86-00	29.324	29.309	21.7	25.1	33.0	17.1	.105	.111	76.3	71.8	5.9	5.6	7.8	7.9	4.28
Depart.	−.030	−.014	+3.0	+2.1	+4.4	+1.2	+.013	+.015	+1.0	+2.5	−0.2	−0.1	+1.0	+1.1	−.03

REMARKS.

1, ✳ 3.8? A — 3.6 P, 4.1 P — 5.2 P, 9.5? P — 10.4 P; ⊠. **2,** ⊠. **3,** ✳° 9.4 A — 10.3 A; ∞² A — P; ⊠. **4,** ∞² A — P; ⊠. **5,** ∞² P; ⊠. **6,** ∞² A; ⊠. **7,** ◍° 8.4 P —; ⊠. **8,** ◍ — 2.3? A; ∞ A; ⊠. **9,** ∞² A — P; ᗜ 5.7 P — 7.7 P. **10,** ⌴² A; ◍° A — P. **11,** ◍ △ 8.4 P — 11.0? P; ∾² P; ◍² 11.0? P —. **12,** ◍ — 4.7? A; ∾ A; ≡ A — P. **13,** ∞² A — P; ✳° 1.9 P — 4.2 P. **14,** ∞ P; ✳° 4.9 P —. **15,** ✳ — 3.0? A; ∞² A — P; ⊠.

16, ◍ 8.7 A — 11.3 A; ≡ A — P. **17,** ∞ A; ✳° 6.3 P — 6.4 P. **18,** ∞² A — P; ◍ 8.9 P —. **19,** ◍ — 0.7? A; ∞ A — P; ≡ A — P. **20,** ● A — P. **21,** ◍ 2.7? A — 4.5? A; ✳ 4.5? A — 6.0? A, 8.5 A — 8.7 A. **23,** ∞² A — P. **24,** ✳° 11.5 A — 6.0 P. **25,** ∞² A; ◍° 10.0 A — 3.4 P; ∾ A; ∾² P; ◍ 3.8 P — 9.2? P; ≡ A — P. **26,** ✳ 2.5? A — 5.5? A. **28,** ✳ 6.1 P — 9.5? P; ◍ 9.5? P —. **29,** ◍² — 9.7 A; ≡ A. **31,** ✳° 3.0? A — 4.3? A, 7.9 A — 8.2 P.

FEBRUARY, 1900.

Date.	Atmospheric Pressure. Inches.		Air Temperature, in degrees Fahrenheit.				Vapor Pressure. Inch.		Relative Humidity. Per cent.		Cloudiness. 0 — 10.		Wind: Direction and Velocity in metres per second.		Precipitation, in inches.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	28.94	29.11	4	9	21	3	.03	.03	59	50	0	0	SW 12	W 11	.00
2	29.30	29.32	2	11	15	1	.03	.03	71	41	0	0	W 5	SW 3	.
3	29.41	29.53	9	18	24	7	.05	.05	74	51	0	0	W 9	W 5	.
4	29.47	29.06	25	45	46	17	.11	.29	79	97	10	$10^{\bullet\circ}$	S 10	S 14	.02
5	28.33	29.19	35	26	45	25	.20	.06	100	42	$10^{\bullet}$	0	NW 21	NW 11	.74
6	29.34	29.35	20	31	34	16	.06	.12	56	74	10	0	S 3	W 8	.00
7	29.62	29.66	23	30	41	23	.10	.12	76	73	0	4	NE 6	S 5	.
8	29.54	29.47	34	35	39	28	.18	.20	95	100	10	$10^{\bullet}$	S 4	E 8	.31
9	29.31	29.51	37	34	41	34	.22	.19	100	100	$\overline{10}^{\bullet}$	$\overline{10}$	SE 8	NW 7	.27
10	29.69	29.62	26	29	34	25	.10	.10	68	61	$\overline{10}$	7	N 6	NE 5	.
11	29.52	29.61	27	32	33	25	.14	.18	98	100	10^{*}	$10^{\bullet\circ}$	N 7	N 5	.00
12	29.69	29.59	36	38	41	31	.21	.23	100	100	$10^{\bullet\circ}$	$10^{\bullet}$	E 5	SE 11	.04
13	29.13	28.85	49	45	56	36	.35	.30	100	100	$\overline{10}^{\bullet 2}$	9	S 21	NW 9	1.55
14	29.30	29.40	26	30	45	24	.06	.06	45	37	$\overline{0}$	5	W 14	W 6	.
15	29.37	29.02	26	40	42	24	.08	.13	58	53	3	1	SW 5	W 14	.
16	29.32	29.32	18	21	41	17	.05	.05	55	43	10	8	NW 9	NW 2	.
17	29.33	29.09	20	20	26	18	.06	.11	58	98	10	$10^{\bullet 2}$	N 5	NE 11	.28
18	28.58	28.89	14	15	21	12	.08	.05	93	54	$10^{\bullet 2}$	8	NW 18	NW 7	.56
19	28.93	29.16	9	20	25	8	.04	.06	56	52	2	8	W 9	NW 13	.
20	29.41	29.60	17	28	34	12	.06	.06	60	38	0	0	NW 9	NW 5	.
21	29.60	29.47	26	33	41	23	.07	.13	51	73	2	6	S 5	SE 5	. .
22	29.10	28.63	37	41	45	32	.22	.26	100	100	$10^{\bullet}$	$\overline{10}^{\bullet}$	E 15	NE 3	1.38
23	28.59	28.74	30	38	41	29	.17	.13	100	69	$\overline{10}$	$\overline{8}$	NE 5	W 11	.20
24	29.05	28.78	32	42	43	29	.13	.23	73	84	$\overline{2}$	9	SW 4	S 13	.
25	28.12	28.61	29	10	52	10	.13	.03	84	48	8	0	W 14	W 17	1.47
26	28.98	29.31	10	4	17	4	.03	.02	43	34	2	0	W 19	W 14	.
27	29.72	29.96	−6	8	11	−8	.01	.01	45	24	0	0	NW 15	NW 8	.
28	30.01	29.74	13	22	24	3	.03	.02	40	76	7	10	SE 4	SE 9	.
Means	29.239	29.271	22.4	26.8	34.9	18.1	.107	.116	72.7	66.9	5.9	5.3	9.5	8.6	6.82
'86-00	29.313	29.306	22.1	25.6	33.6	17.7	.105	.101	75.4	70.9	5.8	5.3	7.9	8.2	4.02
Depart.	−.074	−.035	+0.3	+1.2	+1.3	+0.4	+.002	+.015	−2.7	−4.0	+0.1	±0.0	+1.6	+0.4	+2.80

REMARKS.

4, ◎ 7.5 P —. **5,** ◍ — 8.9 A; ◎ △ 8.9 A — 9.2 A; ⚹ 9.2 A — 11.7 A; ≡ A. **6,** Dense smoke in W & N, A; ⚹° 10.8 A — 1.5 P. **7,** $∞^{2}$ A — P; $⊍^{2}$ 6.5 P —. **8,** $∞^{2}$ A — P; ≡ P; ◎ 0.1 P —. **9,** ◯ — 1.2? P; ≡ A — P. **10,** ⊕ 2.4 P — 3.6 P; ⌓ 5.7 P —. **11,** ⚹ 1.5? A — 10.5 A, 1.7 P — 2.3? P; ≡ P; ◎° 7.9 P —. **12,** ◍° — 0.7 P; ≡ A — P; ◍° 2.7 P —. **13,** ◍ — 7.9 P; ≡ A — P. **14,** $⌓^{2}$ 10.2 P — 11.7 P —. **15,** ∞ ♦ — P. **16,** ⊕ 7.7 A — 2.7 P. **17,** $∞^{2}$ A — P; ⚹ 0.8 P —; ⊠. **18,** $⚹^{2}$ — 10.8 A; ⇸ A — P; ⊠. **19,** ⊕ 2.5 P — 4.5 P; ⊠. **20,** ∞ A; ⊠. **21,** ∞ A — P; ⊠. **22,** $◎^{2}$ 1.2? A — 10.3? P; ≡ P. **23,** ≡ A — P; V° A; ◍° 3.6 P — 4.4 P. **24,** ∞ A — P; ⊕° 2.7 P; $⚡^{2}$ 11.5 P —; ◍ 10.8 P —. **25,** $◍^{2}$ — 6.7? A; $⚡^{2}$ — A; ⚹ 11.5 A, 2.4 P — 2.7 P, 4.0 P — 5.0? P. **28,** $∞^{2}$ in lower air A.

MARCH, 1900.

Date.	Atmospheric Pressure. Inches.		Air Temperature, in degrees Fahrenheit.				Vapor Pressure. Inch.		Relative Humidity. Per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in inches.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	29.37	28.56	37	51	51	22	.22	.37	100	100	10●	10●	SE 14	SE 27	1.65
2	28.54	28.93	27	26	52	25	.11	.07	72	52	10	5	W 19	W 13	.00
3	29.09	29.38	23	25	29	21	.06	.07	53	50	3	0	W 14	NW 8	.
4	29.55	29.46	25	38	43	20	.08	.13	60	58	9	10	W 11	SW 8	.
5	29.58	29.82	21	20	38	18	.11	.08	95	75	10	5	NE 10	NE 3	.03
6	29.77	29.19	24	42	43	15	.11	.27	86	100	10*	10●	E 5	S 11	.35
7	29.30	29.59	32	27	49	27	.09	.08	51	52	7	0	W 15	W 9	.12
8	29.83	29.79	22	27	39	19	.07	.11	62	73	3	1	NW 8	S 6	.
9	29.63	29.33	26	35	47	22	.11	.20	78	100	1	10	SW 4	S 8	.
10	28.97	28.99	36	36	49	31	.16	.13	79	63	3	1	W 5	NW 11	.
11	29.12	29.17	13	12	36	12	.04	.03	50	34	0	0	NW 14	NW 9	.
12	29.27	29.39	4	16	23	3	.02	.06	45	33	0	0	NW 14	NW 7	.
13	29.40	29.26	15	23	30	8	.05	.09	59	75	0	4	N 4	E 6	.
14	29.17	29.17	24	28	45	21	.11	.08	83	57	6	0	NW 6	NW 11	.
15	29.37	29.30	16	21	28	15	.06	.11	65	99	10	10*	NW 9	NE 6	.04
16	28.50	28.94	54	27	55	21	.42	.08	100	59	10●^{2}	0	S 27	W 11	1.95
17	29.31	29.34	20	14	31	14	.06	.04	59	46	0	4	W 7	NW 13	.
18	29.51	29.41	10	23	29	5	.03	.07	42	57	0	8	W 8	S 7	.
19	29.23	29.11	41	45	54	22	.21	.30	85	100	6	10●	S 14	S 15	.00
20	28.93	29.07	47	33	54	33	.30	.06	91	34	10	0	SW 8	W 11	.22
21	29.19	29.35	26	24	34	23	.07	.05	52	41	4	0	W 8	W 13	.
22	29.47	29.30	25	33	43	19	.07	.13	56	71	0	4	SW 6	S 10	.
23	29.20	29.13	36	38	52	30	.15	.05	72	22	10	0	SW 8	W 20	.
24	29.26	29.24	25	27	38	24	.08	.06	57	40	7	0	NW 9	W 10	.00
25	29.30	29.22	21	32	40	17	.06	.06	57	37	1	0	NW 9	N 6	.
26	29.15	29.01	31	31	42	25	.09	.16	55	94	5	10*	SE 4	S 3	.01
27	28.96	29.10	30	36	44	29	.17	.13	100	61	10	0	W 5	W 5	.13
28	29.05	29.13	29	32	41	26	.07	.09	47	50	1	2	NW 13	NW 13	.
29	29.21	29.30	34	36	43	27	.12	.06	64	32	1	0	NW 11	NW 7	.
30	29.30	29.18	32	35	48	29	.08	.14	46	71	6	10	N 5	SE 5	.
31	29.02	29.03	28	33	37	26	.12	.09	83	49	10*	6	N 9	NW 11	.12
Means	29.244	29.232	26.9	29.9	41.5	20.9	.113	.111	67.9	60.8	5.3	3.9	9.8	9.8	4.62
'86-00	29.274	29.253	28.9	31.7	40.0	24.6	.120	.133	73.7	69.1	6.0	5.3	8.0	8.3	4.21
Depart.	−.030	−.021	−2.0	−1.8	+1.5	−3.7	−.007	−.022	−5.8	−8.3	−0.7	−1.4	+1.8	+1.5	+.41

REMARKS.

1, ● 0.7? A — 8.2 P, 10.5 P — 10.8? P; ∽ A; ≡ A — P. 2, ✳° 4.2 P. 4, ∞ A — P; ⊕ 2.2 P — 3.5 P. 5, ✳ 0.7? A — 7.7 A; ∞^{2} A; ✳° 9.2 A — 0.8 P. 6, ✳ 6.7? A — 0.7 P; ● △ 0.7 P — 1.9 P; ● 1.9 P — 5.7 P, 7.7 P — 9.9 P; ∽ 1.0 P — 5.0 P; ≡ P; ⊠. 7, ∞ A. 8, ⊕ 3.6 P — 3.8 P. 9, ∞ A — P. 10, ∞^{2} A — P. 12, ⌓^{2} 10.7 P — 12 P —. 13, ∞^{2} A — P; ⊕° 2.3 P — 3.7 P; ⊍ 7.2 P — 8.4 P. 14, ⊍° 11.2 P — 11.4 P. 15, ∞ A — P; ✳ 5.0 P — 7.2 P; △ ✳ 7.2 P — 9.2 P; △ 9.2 P —; ⊠. 16, △ — 4.8? A; ●^{2} 4.8? A — 1.2 P. 17, ∞^{2} A — P. 19, ∞ A — P; ●° 3.4 P; ● 7.3 P —. 20, ● — 2.0? A; ∞ A — P. 21, ∞ A. 22, ∞ A — P. 23, ∞^{2} A — P. 24, ●° 0.2 P — 0.8 P. 26, ∞ A — P; ⊕ 8.5 A — 11.5 A; ✳ 3.7 P —. 27, ✳ — 3.7? A; ≡ A; ∞ A — P. 30, ∞ A — P. 31, ✳ 7.3 A — 1.4 P.

APRIL, 1900.

Date.	Atmospheric Pressure. Inches. A.M. 8.00	Atmospheric Pressure. Inches. P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	Air Temperature P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure. Inch. A.M. 8.00	Vapor Pressure. Inch. P.M. 8.00	Relative Humidity. Per cent. A.M. 8.00	Relative Humidity. Per cent. P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	Cloudiness. 0—10. P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00	Wind P.M. 8.00	Precipitation, in inches. P.M. 8.00
1	29.20	29.28	34	42	50	28	.08	.12	44	45	1	0	NW 12	W 9	.
2	29.35	29.33	44	43	55	35	.13	.19	47	70	3	5	SW 5	S 9	.00
3	29.07	29.00	38	40	43	37	.23	.19	100	77	10●	0	N 7	W 10	.39
4	29.14	29.38	37	33	47	32	.13	.12	62	65	0	0	NW 10	NW 9	.
5	29.42	29.23	35	43	51	27	.08	.11	39	37	0	0	N 5	N 6	.
6	29.00	28.87	43	41	56	35	.13	.14	48	57	1	0	N 7	NW 13	.
7	28.78	28.86	41	41	54	37	.13	.09	53	37	1	4	N 12	NW 13	.
8	28.89	29.01	40	34	49	34	.07	.08	30	39	1	0	NW 11	NW 11	.
9	29.06	29.21	27	30	39	24	.07	.08	48	51	0	10	NW 13	NW 5	.
10	29.30	29.45	29	34	42	22	.11	.11	66	53	4	0	NW 9	NW 10	.
11	29.60	29.60	35	38	53	28	.15	.17	72	75	8	5	NW 5	S 8	.
12	29.53	29.31	39	37	41	33	.19	.22	81	100	9	10●	SE 3	NE 12	.38
13	29.14	29.07	37	38	40	36	.22	.23	100	100	10●°	10	NE 10	NW 6	.06
14	29.19	29.29	37	44	50	31	.18	.14	83	48	0	3	W 7	SW 7	.00
15	29.49	29.58	46	50	61	36	.15	.12	51	35	0	0	W 7	N 8	.
16	29.77	29.75	50	46	64	41	.17	.15	49	48	0	2	SW 4	S 9	.
17	29.77	29.64	46	48	50	43	.22	.30	72	88	10	10	SW 4	S 10	.05
18	29.45	29.37	52	52	55	47	.39	.39	100	100	10●	10●°	S 17	S 12	.18
19	29.21	29.22	55	60	71	51	.43	.24	100	47	10	1	SW 9	NW 14	.54
20	29.40	29.48	53	55	69	43	.24	.28	61	66	0	3	NW 10	S 5	.
21	29.50	29.39	57	54	73	50	.21	.27	45	63	9	7	S 3	S 5	.
22	29.27	29.26	53	45	56	44	.30	.30	76	100	10	10●°	N 7	NE 7	.10
23	29.22	29.17	47	48	55	41	.31	.33	100	100	10	10	N 4	E 4	.04
24	29.20	29.34	49	39	51	39	.35	.19	100	85	10	0	N 3	N 4	.16
25	29.35	29.23	45	50	62	35	.15	.12	49	34	0	0	NW 9	NW 11	.
26	29.14	29.09	48	45	62	40	.12	.12	35	41	7	1	NW 11	E 6	.
27	29.03	29.18	45	40	49	37	.13	.13	44	55	5	9	NW 10	NW 7	.
28	29.25	29.40	45	37	49	33	.15	.19	54	88	7	10●	N 7	NE 4	.01
29	29.35	29.17	47	60	67	33	.17	.19	52	38	2	0	NW 7	NW 6	.05
30	29.14	28.97	60	56	77	47	.26	.42	48	93	1	10●	W 6	W 10	.02
Means	29.274	29.269	43.8	44.1	54.7	36.6	.188	.191	63.6	64.5	4.6	4.3	7.8	8.3	1.98
'86-'00	29.334	29.319	42.1	42.7	53.8	35.2	.189	.191	68.3	66.9	5.3	4.9	6.9	7.1	3.02
Depart.	−.060	−.050	+1.7	+1.4	+0.9	+1.4	−.001	.000	−4.7	−2.4	−0.7	−0.6	+0.9	+1.2	−1.04

REMARKS.

2, ◍° 0.1 P; ⊕ 3.5 P — 5.1 P. **3,** ◍ 3.8? A — 5.0 P; ≡ A. **5,** ∞ in N A — P. **6,** ∞ A — P. **11,** ∞ A; ⊍² 7.5 P — 9.0 P. **12,** ∞ A — P; ≡ P; ◯ 8.6 A — 8.9 A, 11.0 A —. **13,** ◍° — 6.3 P; ≡ A — P. **14,** ∞ A; ◍ 1.4 P — 1.9 P. **15,** ∞ A. **16,** ⊕ 5.9 P — 6.1 P. **17,** ∞ A; ◍ 9.4 A — 5.6 P; 9.5 P — 10.0? P. **18,** ◍ 3.7? A — 0.2 P; ≡ P; ◍° 4.9 P —. **19,** ◍ — 5.5? A; ∞² A — P. **21,** ∞ A — P. **22,** ◍ 3.8? A — 5.0? A; ◍° 8.1 A; ∞ A; ≡ P; ◍ 9.9 A — 0.7 P, 1.8 P —. **23,** ◍ — 3.0? A; ◍° 10.0 A; ≡ A — P; ◍ 11.4 A — 5.3 P, 10.2? P —. **24,** ◍ — 2.2? A, 8.4 A — 10.5 A; ≡ A; ∞ A — P; ◍ △ 4.7 P — 5.0 P; ◍° 5.5 P — 5.9 P. **28,** ◍° 11.3 A — 11.8 A, 3.4 P; ◯ 6.4 P — 7.9 P; ✳ ◯ 7.9 P — 8.2 P; ◍ 8.2 P — 9.7? P. **30,** ∞ A — P; ◍ 7.3 P — 8.5 P.

MAY, 1900.

Date.	Atmospheric Pressure. Inches. A.M. 8.00	P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure. Inch. A.M. 8.00	P.M. 8.00	Relative Humidity. Per cent. A.M. 8.00	P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00	P.M. 8.00	Precipitation, in inches. P.M. 8.00
1	29.09	29.22	50	53	63	42	.17	.13	48	32	1	0	W 11	W 7	.01
2	29.34	29.21	50	53	67	43	.20	.37	58	94	9	10	SE 7	S 8	.
3	28.94	28.85	55	54	56	49	.43	.39	100	92	10●²	8	E 8	S 8	2.25
4	28.95	29.17	43	46	54	40	.24	.11	85	36	9	0	W 9	W 7	.21
5	29.21	29.35	43	43	50	39	.19	.11	70	41	9	0	W 8	W 8	.
6	29.41	29.27	46	49	56	34	.10	.19	32	58	10	8	SW 7	W 12	.00
7	29.48	29.51	40	50	56	34	.12	.09	49	26	6	2	NW 8	NW 5	.
8	29.41	29.01	47	57	57	38	.21	.45	65	98	10	10	SW 12	S 12	.14
9	28.77	29.09	68	43	72	43	.46	.14	67	51	7	9	W 16	N 12	.29
10	29.26	29.35	38	38	46	29	.09	.11	42	49	6	5	NW 9	NW 8	.00
11	29.39	29.22	41	43	59	28	.10	.20	38	74	7	2	W 7	S 7	.
12	29.37	29.35	48	47	65	38	.19	.26	59	80	0	2	W 1	S 8	.
13	29.29	29.27	54	67	79	45	.36	.47	88	70	10	6	S 7	SW 4	.
14	29.34	29.17	47	44	70	44	.32	.29	100	100	10	10	NE 5	NE 6	.
15	29.17	29.19	76	64	93	43	.54	.57	59	99	4	10●	W 7	N 15	.09
16	29.42	29.42	51	52	72	49	.24	.27	64	70	10	6	NE 7	S 6	.04
17	29.49	29.33	53	53	66	46	.31	.40	78	100	10	10●°	E 3	SE 5	.02
18	29.21	29.06	48	44	54	44	.33	.29	100	100	10●°	10●²	NE 3	SE 7	.92
19	28.99	28.81	44	44	45	42	.29	.29	100	100	10●	10●°	NE 9	NE 15	1.54
20	28.89	29.02	48	48	57	42	.26	.23	79	69	10	1	N 5	NW 6	.04
21	29.04	29.05	55	47	64	44	.27	.28	61	87	0	7	W 5	NW 6	.06
22	29.14	29.18	51	63	70	41	.21	.18	56	31	0	4	NW 11	N 6	.
23	29.30	29.27	56	65	77	49	.26	.36	57	59	7	6	N 4	SW 4	.
24	29.29	29.34	64	48	66	47	.40	.32	66	97	10	10	SW 1	NE 7	.
25	29.45	29.61	49	45	55	45	.28	.24	77	78	10	4	NE 13	NE 8	.
26	29.60	29.46	55	48	61	41	.15	.20	33	59	5	8	NE 7	E 7	.
27	29.33	29.28	53	61	74	44	.23	.23	58	62	8	4	N 4	S 5	.
28	29.53	29.64	45	42	64	42	.26	.25	86	92	10	2	NE 10	NE 3	.00
29	29.70	29.59	54	59	73	40	.19	.24	47	48	0	1	W 3	S 6	.
30	29.59	29.37	67	64	80	51	.29	.31	43	52	0	9	W 5	SW 8	.
31	29.29	29.25	71	75	84	57	.54	.45	71	52	3	7	W 6	NW 8	.00
Means	29.280	29.255	51.9	51.9	64.7	42.4	.265	.272	65.7	69.5	6.8	5.8	7.1	7.5	5.61
'86-00	29.308	29.285	53.6	53.2	65.4	45.7	.304	.303	73.6	75.2	6.1	5.8	6.1	6.6	3.78
Depart.	−.028	−.030	−1.7	−1.3	−0.7	−3.3	−.039	−.031	−7.9	−5.7	+0.7	±0.0	+1.0	+0.9	+1.83

REMARKS.

1, ∞ A — P. **2**, ∞² in upper air A — P. **3**, ◍² 8.6? A — 2.5 P, 9.2 P — 9.6 P; ≡ A — P; ⚡ in SW 7.7 P; ⛈ 8.3 P — 9.1 P. **4**, ○² 4.3? A — 7.1 A. **6**, ∞² P; ◍ 1.1 P — 1.7 P, 2.0 P — 3.3 P, 6.3 P — 7.6 P. **8**, ∞ A; ◍ 8.7 A — 9.2 A, 9.7 A — 11.4 A, 8.7 P — 9.4 P; ⛈ 8.6 P — 8.9 P; ⚡ 12 P; ◍ 10.1 P —. **9**, ○ — 1.2? A, 10.4 A — 2.7 P, 2.8 P — 4.4 P; ◡° 8.0 P. **10**, ✳° 3.4 P. **12**, ∞ A — P; ⊕ 11.5 A — 3.2 P. **13**, ∞² A — P. **14**, ≡ A — P; ∞² A — P; ≡ in N. P. **15**, ∞² A — P; ◍ 7.4 P — 7.5 P, 7.8 P — 8.8 P, 9.6 P — 10 2 P; ⛈ 7.4 P — 9.2 P. **17**, ∞ A — P; ◍ 0.2 P — 0.9 P; ≡ P; ◍° 5.7 P —. **18**, ◍° — 8.5? A; ≡ A — P; T 5.2? P, 6.2 P, 7.5 P; ◍ 4.0 P — 4.4 P, 5.1 P —. **19**, ◍² — 10.8 A; ≡ A — P; ◍ 11.8 A —. **20**, ◍ — 2.2? A. **21**, ◍° 11.2 A — 11.3 A; ◍ ▲ 11.3 A — 11.3 A; T in W 1.1 P — 1.3 P; ◍° 0.8 P, 1.9 P, 2.9 P, 3.9 P — 4.0 P, 4.6 P — 4.9 P, 7.1 P — 7.6 P. **23**, ∞² A — P. **24**, ∞² A — P. **25**, ∞² A; ⊕ 1.5 P — 2.7 P. **27**, ∞ A — P. **28**, ◍° 9.7 A — 9.9 A, 11.9 A — 3.2 P, 3.4 P — 4.9 P. **29**, ∞ A — P. **30**, ∞ A — P; ⌓ 8.3 P — 8.7 P; ◍° 9.7 P. **31**, ∞² A — P.

JUNE, 1900.

Date.	Atmospheric Pressure. Inches. A.M. 8.00	P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure. Inch. A.M. 8.00	P.M. 8.00	Relative Humidity. Per cent. A.M. 8.00	P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00		P.M. 8.00		Precipitation, in inches. P.M. 8.00
1	29.36	29.36	74	71	88	66	.48	.48	58	61	8	10	NW	5	S	2	.
2	29.25	29.13	69	66	82	59	.54	.52	76	83	5	10	SW	8	S	8	.
3	29.28	29.37	53	52	66	50	.40	.39	100	100	10●	10	NE	8	NE	13	.81
4	29.49	29.47	51	46	57	46	.28	.28	74	89	8	0	NE	12	E	6	.20
5	29.45	29.37	55	57	78	43	.26	.33	59	71	0	0	N	2	S	7	.
6	29.40	29.36	70	58	81	54	.42	.43	57	87	0	1	E	4	S	7	.
7	29.35	29.23	65	56	74	51	.46	.45	76	100	2	7	S	6	S	8	.
8	29.15	29.09	62	64	76	55	.52	.59	95	100	10	10●°	SW	8	S	6	.01
9	29.09	29.26	67	70	81	61	.66	.35	100	49	9	0	W	4	N	8	.06
10	29.48	29.43	61	55	72	52	.27	.27	49	61	0	2	E	7	S	10	.
11	29.36	29.26	60	69	79	49	.43	.54	84	75	4	9●°	SW	8	SW	7	.00
12	29.39	29.47	69	63	75	60	.43	.35	63	60	8	9	NW	7	SE	3	.00
13	29.57	29.51	69	59	74	59	.39	.32	55	67	0	2	SE	2	SE	7	.
14	29.38	29.28	62	69	71	54	.52	.68	95	95	10●	10	SW	4	SW	6	.05
15	29.35	29.34	66	65	74	58	.43	.24	68	38	5	3	NW	9	NW	7	.
16	29.36	29.28	68	67	80	54	.37	.46	54	70	2	10	NW	4	SW	6	.
17	29.31	29.31	64	58	71	57	.45	.45	75	90	10	10	W	5	S	4	.
18	29.36	29.43	59	52	63	52	.42	.36	83	92	8	3	NE	10	NE	7	.
19	29.47	29.40	59	59	65	49	.33	.30	67	59	8	8	NE	7	E	2	.
20	29.31	29.14	60	69	72	55	.36	.45	72	62	10	8	NW	5	NW	8	.00
21	29.15	29.11	71	72	83	60	.40	.45	53	57	0	4	W	7	SW	10	.
22	29.14	29.17	72	62	85	60	.57	.55	72	100	0	10●	W	6	S	3	1.57
23	29.28	29.31	54	59	70	50	.39	.33	94	67	8	0	NE	5	S	9	.58
24	29.27	29.11	61	69	78	52	.48	.64	89	90	3	2	SW	7	SW	10	.
25	29.04	29.14	75	72	83	65	.68	.36	79	46	4	3	W	6	N	7	.
26	29.30	29.21	67	62	78	58	.32	.39	50	69	3	1	S	4	S	7	.
27	29.09	28.99	75	73	90	58	.73	.73	83	88	4	7	SW	6	SW	10	.00
28	29.00	28.97	79	67	87	67	.76	.64	78	95	3	10●²	SW	5	W	17	.69
29	28.96	28.91	72	74	81	63	.62	.55	80	66	0	4	W	7	SW	10	.18
30	29.03	29.11	58	57	74	53	.29	.24	58	49	2	3	W	12	W	13	.08
Means	29.281	29.251	64.9	63.1	76.3	56.0	.455	.437	73.2	74.5	4.8	5.5	6.3		7.6		4.23
'86-'00	29.314	29.291	62.3	62.2	73.7	54.9	.457	.452	79.4	79.3	5.9	5.7	5.3		6.2		2.82
Depart.	−.033	−.040	+2.6	+0.9	+2.6	+1.1	−.002	−.015	−6.2	−4.8	−1.1	−0.2	+1.0		+1.4		+1.41

REMARKS.

1, ⊕ 7.4 A — 8.5 A; ∞² A — P. **2,** ∞² A; ↯ 7.0 P — 11.8 P. **3,** ≡ A — P; ● 5.1? A — 9.2 A, 11.9 A — 1.5 P; T 0.9 P; ◌² 4.7 P — 6.7 P; ⌈↯ 10? P — ? P; ● 10.2 P —. **4,** ◌ — 1.2? A. **5,** ∞ A — P. **6,** ∞ A. **7,** ∞ A — P. **8,** ≡ P; ● 6.0 P — 11.8? P. **9,** ∞² A; ●° 11.8 A — 12 A. **11,** ∞ A — P; T in NW 6.3 P; ● 7.4 P — 8.2 P; ↯ in SW 8.8 P. **12,** ⊕ 11.5 A — 2.5 P; ⊽ 8.6 P — 10.6 P —. **14,** ● 7.9 A — 8.1 A, 9.8 A — 11.2 A, 11.7 A — 0.9 P. **15,** ⊕ 11.8 A — 2.2 P. **16,** ⊕° 11.6 A — 1.5 P, 5.5 P — 6.2 P. **17,** ⊗² 10.0 A — 1.9 P, 4.0 P — 5.0 P. **18,** ∞ A — P; ⊕° 1.5 P — 2.2 P. **19,** ⊕ 7.2 A — 0.3 P. **20,** ●° 0.7 P — 3.8 P, 4.1 P — 4.6 P. **22,** ∞² A; ●° 0.4 P; ⌈↯² 0.4 P — 5.2 P; ● 0.7 P — 2.0 P; ● ▲ 2.0 P — 2.1 P; ○ 2.1 P — 2.7 P; ● ▲ 2.7 P — 2.8 P; ●² 2.8 P —. **23,** ◌² — 4.2? A; ⊕² 11.0 A — 11.2 A; ∞ in W A — P. **24,** ∞ A — P. **25,** ∞² A — P. **27,** ∞ A; ⌈↯ 4.2 P — 6.0 P; ●° 4.3 P — 4.7 P; ◠² 6.2 P — 6.5 P. **28,** ⌈↯ 0.9 P — 2.0 P, 7.2 P — 9.4 P; ◌² 1.0 P — 2.2 P, 7.8 P — 9.3 P. **29,** ∞² A; ∞ P; ● 11.3 P — 11.9 P; ↯ in W 11.7 P — 11.9 P —.

JULY, 1900.

Date.	Atmospheric Pressure. Inches.		Air Temperature, in degrees Fahrenheit.				Vapor Pressure. Inch.		Relative Humidity. Per cent.		Cloudiness. 0 — 10.		Wind: Direction and Velocity in metres per second.		Precipitation, in inches.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	29.19	29.30	59	62	71	50	.31	.30	61	54	6	0	NW 11	NW 8	.
2	29.42	29.47	61	63	75	51	.33	.40	63	69	0	4	NW 11	S 6	.
3	29.51	29.28	68	62	75	56	.42	.43	61	79	4	10●°	SW 8	S 13	.00
4	29.23	29.25	74	77	84	59	.66	.54	80	60	2	5	NW 7	NW 7	.08
5	29.38	29.27	73	68	83	64	.50	.52	64	76	2	8	NE 5	S 5	.
6	29.25	29.11	66	65	72	59	.40	.48	63	81	8	9	E 4	S 5	.06
7	29.10	29.03	81	70	92	64	.76	.66	72	89	8	10	W 4	W 7	.01
8	28.93	28.86	79	78	90	67	.66	.68	68	71	4	6	SW 9	SW 9	.
9	28.95	28.99	73	66	80	65	.54	.59	65	93	2	8	W 7	W 5	.11
10	29.16	29.32	65	67	76	56	.46	.42	75	63	3	2	W 10	W 7	.
11	29.44	29.38	72	67	82	60	.52	.62	67	91	0	8	SW 5	S 10	.
12	29.33	29.25	73	63	80	63	.68	.57	86	100	6	10●	S 9	S 9	.48
13	29.22	29.15	67	66	77	56	.54	.45	80	71	2	6	W 4	W 9	.04
14	29.18	29.27	67	70	78	58	.45	.33	68	46	3	2	NW 10	N 7	.
15	29.31	29.26	68	75	79	60	.43	.68	63	79	9	10	W 6	W 7	.00
16	29.29	29.26	77	82	92	68	.68	.73	75	67	5	3	NW 5	SW 9	.
17	29.27	29.27	80	81	92	74	.68	.84	66	80	7	1	SW 7	SW 9	.
18	29.23	29.20	78	76	95	73	.84	.48	86	52	5	6	SW 5	NW 11	.02
19	29.34	29.32	71	74	85	58	.46	.46	62	55	2	1	NW 8	NW 5	.
20	29.42	29.40	71	64	80	61	.54	.48	70	83	1	4	E 4	S 8	.
21	29.41	29.36	69	71	79	58	.64	.73	90	95	7	10●°	S 7	SW 5	.00
22	29.51	29.47	70	66	78	63	.50	.52	69	80	4	3	NE 9	SE 4	.00
23	29.46	29.41	75	75	91	62	.64	.68	73	81	0	8	W 4	SW 6	.
24	29.38	29.29	70	73	86	65	.71	.71	95	87	9●	3	SW 5	S 7	.08
25	29.18	29.12	76	68	83	67	.73	.68	83	100	8	10	SW 8	SW 5	.43
26	29.20	29.26	65	62	68	61	.62	.55	100	100	10●	10	N 4	N 2	1.71
27	29.36	29.38	63	67	76	61	.55	.40	99	60	9	1	N 4	S 4	.
28	29.47	29.43	66	68	79	57	.39	.46	60	68	1	1	NW 2	S 5	.
29	29.46	29.39	72	66	81	61	.57	.55	73	88	0	0	SW 4	S 9	.
30	29.36	29.32	69	68	79	61	.64	.55	91	84	7	2	SW 6	SW 6	.
31	29.33	29.25	71	73	84	62	.66	.73	85	87	0	0	W 4	SW 7	.
Means	29.299	29.268	70.6	69.5	81.4	61.3	.557	.536	74.6	77.1	4.0	5.2	6.3	7.0	3.02
'86-00	29.322	29.275	67.6	66.8	78.2	60.2	.545	.533	80.0	80.6	5.1	5.2	5.1	6.1	3.79
Depart.	–.023	–.007	+3.0	+2.7	+3.2	+1.1	+.012	+.003	–5.4	–3.5	–1.1	±0.0	+1.2	+0.9	–0.77

REMARKS.

3, ∞ A; ⊕ 0.2 P — 0.3 P; ◍° 11.3 A, 4.5 P — 4.8 P, 7.2 P — 10.5? P. **5,** ∞² A; ∞ P. **6,** ◍° 0.8? A — 1.9? A; ◍ 11.1 A — 12 M; ↯ in SW 8.0 P — 9.0? P. **7,** ⊕ 8.7 A — 9.5 A; ∞ A — P; ☈ 5.4 P — 5.8 P; ◍° 6.3 P; ◍ 7.0 P — 7.4 P; ◡ 9.0 P — 9.6 P. **8,** ∞ A — P. **9,** ◍² 7.4 P — 7.7 P. **12,** ∞ A — P; ◍² 5.7 P — 8.7 P; ☈ 5.8 P — 7.9 P. **15,** ⊕ 10.2 A — 11.8 A; ◍° 7.0 P — 7.2 P; ↯ in W 9.0 P — 11.0 P. **16,** ∞ A — P. **17,** ∞² A; ∞ P; ↯ in W 8.6 P — 9.7 P. **18,** ◍° 6.9 A — 7.1 A; ∞² A; ☈ in NW 2.2 P — 3.0 P; ◍ 2.4 P — 3.1 P. **21,** ◍° 11.4 A, 12 M; ◍ 7.6 P — 8.5? P. **23,** ∞² A — P. **24,** ◍ 2.5 ? A — 8.2 A; ∞² A — P. **25,** ∞² A; ◍ 8.5 A — 9.5 A; ◍° 11.9 A; ☈ 5.5 P — 6.3 P; ↯ in E 8.0 P —; ◍ 5.5 P — 7.9 P, 8.9 P —. **26,** ◍ — 3.0 P, 3.2 P — 4.8 P; ≡ A — P. **27,** ≡ A. **28,** ∞ in W A. **29,** ∞² A. **31,** ∞² A — P; ↯ in W 8.0 P — 9.0 P.

AUGUST, 1900.

Date.	Atmospheric Pressure. Inches.		Air Temperature, in degrees Fahrenheit.				Vapor Pressure. Inch.		Relative Humidity. Per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.				Precipitation, in inches.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00		P.M. 8.00		P.M. 8.00
1	29.26	29.33	72	66	79	66	.64	.29	83	44	9	5	W	6	N	8	.00
2	29.37	29.32	64	62	76	54	.40	.40	66	74	2	1	NW	2	S	8	.
3	29.34	29.43	66	58	76	56	.42	.30	64	60	0	0	NW	5	N	11	.
4	29.52	29.55	61	63	72	48	.33	.33	63	58	0	1	N	6	SE	4	.
5	29.62	29.52	65	63	77	55	.40	.45	66	80	0	7	NW	1	S	8	.
6	29.42	29.35	69	74	88	61	.55	.76	79	89	1	3	W	5	S	4	.00
7	29.45	29.47	69	64	74	64	.53	.57	77	99	10	10●	N	5	NE	6	.13
8	29.48	29.33	64	66	71	61	.59	.62	100	99	10	10	SE	4	S	8	.20
9	29.26	29.29	75	78	87	65	.73	.71	83	74	6	3	NW	8	S	3	.09
10	29.33	29.23	78	76	91	69	.64	.73	68	83	2	4	W	2	SW	9	.00
11	29.20	29.12	81	84	92	73	.71	.68	69	58	0	1	W	7	W	11	.
12	29.24	29.35	67	61	84	57	.55	.33	84	62	9	8	NE	9	SE	2	.03
13	29.38	29.32	62	60	66	59	.50	.48	88	93	10	10	E	6	E	8	.00
14	29.31	29.40	54	60	66	54	.42	.46	100	89	10●°	7●	NE	7	E	5	.21
15	29.46	29.44	64	61	72	57	.50	.53	84	100	9	10	S	6	S	5	.28
16	29.32	29.28	66	61	78	61	.64	.53	100	100	10●	1'	S	7	NE	6	.33
17	29.31	29.34	67	68	84	58	.64	.57	95	86	8	0	W	3	NW	4	.02
18	29.41	29.33	69	71	79	60	.43	.55	61	71	1	8	NE	2	W	5	.
19	29.33	29.38	62	61	72	58	.46	.35	85	65	6	0	N	7	N	6	.06
20	29.38	29.33	62	61	68	51	.39	.32	67	62	1	6	NE	5	E	4	.
21	29.35	29.27	62	60	75	55	.42	.48	79	93	8	2	NE	4	S	7	.
22	29.26	29.25	63	64	77	56	.50	.53	86	89	2	1	NW	5	S	4	.
23	29.37	29.36	64	66	82	57	.48	.55	83	87	0	6	N	3	S	5	.
24	29.38	29.31	67	72	77	61	.66	.78	98	100	10●°	10	S	8	S	7	.00
25	29.32	29.33	76	77	89	72	.81	.84	92	89	6	0	W	5	S	3	.
26	29.36	29.30	82	79	96	71	.78	.84	74	86	0	9	SW	3	SW	5	.
27	29.34	29.28	80	77	90	73	.71	.68	71	75	3	9	N	4	SW	6	.
28	29.29	29.30	72	67	79	66	.64	.53	88	82	10	1	NE	5	E	5	.01
29	29.37	29.37	68	65	79	63	.58	.55	78	91	7	1	S	3	S	7	.
30	29.41	29.38	65	76	88	62	.62	.48	100	55	10	0	W	4	NW	7	.
31	29.50	29.55	72	66	78	65	.50	.55	65	88	1	5	NE	5	SE	4	.
Means	29.366	29.349	68.0	67.8	79.8	60.9	.552	.541	80.4	80.0	5.2	4.5	4.9		6.0		1.36
'86-00	29.329	29.315	65.2	65.3	75.8	59.1	.537	.531	83.6	82.4	5.5	4.7	5.2		5.8		4.07
Depart.	+.037	+.034	+2.8	+2.0	+3.5	+1.8	+.015	+.010	−3.2	−2.4	−0.3	−0.2	−0.3		+0.2		−2.71

REMARKS.

1, ⊕° 4.2 A — 5.7 A, 9.8 A — 9.9 A; ∞ A; ⚡ in SE 10.7 P — 11.5 P —. 3, ⚡² in SE 10.4 P — 11.9 P —. 4, ≡° in lowlands P. 6, ○ 2.2? A — 5.0? A; ∞ A; ⛈ 5.6 P — 6.3 P; ⊕° 6.3 P — 6.4 P; ⚡ in W 9.9 P — 11.5 P —. 7, ⊕ 4.7? A — 5.9? A; ∞² A — P; ⊕° 10.6 A — 1.2 P; ⊕ 1.9 P — 3.2 P; ⊕° 4.7 P; ⚡ in W 9.7 P —; ⊕ 6.9 P —. 8, ⊕ — 7.7 A; ≡ A; ∞ A — P; ⊕° 11.3 A — 11.4 A, 8.3 P — 8.5 P; ⊕ 9.7 P — 10.2 P. 9, ∞ A. 10, ∞ A — P; T in N 3.7 P — 3.8 P; ⛈ 4.3 P — 4.9 P; ⊕ 4.5 P — 5.4 P; ⚡ in NW 7.0 P — 9.0 P. 11, ∞² A — P. 12, ○² 11.7 A — 0.3 P. 13, ⊕ 1.0 P — 1.1 P; ⊕° 2.0 P; ⊕ 9.0 P —. 14, ⊕ — 8.1 A; ≡ A; ∞² P. 15, ∞² A; ⊕ 0.7 P — 3.9 P; ⛈ 1.4 P — 3.8 P. 16, ≡ A; ⊕ 6.7 A — 9.4 A, 11.0 A — 11.1 A, 11.7 A — 11.7 A; ⊕² 0.4 P — 0.9 P; T in NW 0.8 P. 17, ⛈ 1.7 P — 3.2 P; ○ 1.7 P — 3.1 P; ≡ in lowlands P. 18, ○° 8.0 P — 8.1 P; ⚡ in W 10.7 P. 19, ⊕ 0.1? A — 1.2? A. 22, ∞² A — P; T in S 2.6 P — 3.2 P; ⚡ in NE 7.6 P — 7.7 P. 23, ∞² A. 24, ≡ A; ⊕ 7.7 A — 9.4 A, 1.1 P — 1.7 P; ⊕° 2.5 P — 3.9 P. 25, ∞² A — P. 26, ∞² A — P; ⚡ in SW 7.5 P — 8.5 P —. 27, ∞ A — P; ⚡² in NW and S 7.3 P —; T in NW 9.0 P. 28, ○° 5.0 A. 29, T? in N 8.5 A — 8.7 A. 30, ≡ A. 31, ∞² A — P.

SEPTEMBER, 1900.

Date.	Atmospheric Pressure. Inches.		Air Temperature, in degrees Fahrenheit.				Vapor Pressure. Inch.		Relative Humidity. Per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in inches.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	29.68	29.70	65	62	73	59	.48	.53	77	98	6	6	NE 6	E 5	.
2	29.69	29.55	68	70	85	61	.62	.68	89	98	9	0	SW 4	SW 7	.
3	29.58	29.43	73	71	91	66	.71	.68	86	87	4	0	W 8	SW 8	.
4	29.49	29.51	72	74	87	67	.71	.43	87	54	6	0	W 4	N 7	.
5	29.57	29.43	71	67	85	62	.45	.48	60	75	0	2	NE 4	S 8	.
6	29.28	29.18	73	77	92	64	.71	.68	86	75	8	10	SW 8	W 13	.00
7	29.35	29.50	69	59	77	59	.55	.45	78	89	7	0	NE 5	E 7	.
8	29.59	29.48	66	64	76	55	.39	.48	62	83	0	9	SE 2	SW 7	.
9	29.41	29.39	69	69	82	61	.57	.57	81	81	7	3	NW 4	S 3	.
10	29.51	29.49	65	59	71	58	.35	.36	57	75	3	7	NE 6	SE 5	.
11	29.40	29.17	62	71	77	57	.52	.76	96	100	10	10	S 9	S 9	.
12	28.79	29.00	80	65	87	65	.57	.36	58	60	0	0	SW 15	W 13	.
13	29.26	29.29	60	59	72	52	.37	.39	74	79	4	0	N 4	W 2	.
14	29.31	29.35	61	67	81	52	.39	.27	72	41	8	5	SW 6	NW 9	.
15	29.51	29.46	58	53	67	49	.30	.33	62	85	3	6	NE 5	SE 9	.
16	29.06	29.09	53	53	55	52	.40	.40	100	100	10•	7	NE 15	SE 4	1.38
17	29.06	28.96	57	49	70	49	.46	.33	100	98	10	10•	N 2	NW 12	.40
18	28.97	29.36	52	52	66	46	.39	.23	100	60	9•	0	NW 14	NW 10	2.04
19	29.64	29.67	50	47	59	41	.22	.23	62	72	0	0	N 4	SE 4	.
20	29.66	29.50	57	57	63	44	.31	.43	67	94	8	10•°	S 6	S 11	.00
21	29.38	29.27	62	64	73	56	.55	.59	100	100	10•°	10	S 10	SW 8	.05
22	29.27	29.23	56	56	69	53	.39	.37	83	82	0	0	W 7	W 7	.13
23	29.22	29.21	57	59	67	49	.39	.39	84	79	2	8	W 5	NW 7	.
24	29.33	29.45	58	61	73	50	.37	.33	79	64	0	0	NW 8	NW 9	.
25	29.62	29.60	60	56	67	51	.33	.40	66	88	2	3	N 5	S 5	.
26	29.55	29.45	58	54	71	54	.42	.36	87	89	3	0	W 2	SE 6	.
27	29.43	29.41	56	59	75	51	.42	.48	90	98	9	3	S 4	S 6	.
28	29.52	29.58	57	52	61	52	.46	.33	100	88	10•°	4	NE 9	NE 5	.07
29	29.55	29.37	54	59	62	47	.37	.50	90	100	8	10	E 3	S 3	.00
30	29.41	29.51	59	59	67	58	.50	.50	100	100	10•	10	NW 1	NE 3	.22
Means	29.401	29.386	61.9	60.8	73.4	55.0	.456	.444	81.1	82.9	5.5	4.4	6.2	7.1	4.29
'86-'00	29.412	29.382	58.4	58.8	69.4	52.6	.426	.431	83.8	83.2	5.1	4.8	6.0	6.7	4.50
Depart.	−.011	+.004	+3.5	+2.0	+4.0	+2.4	+.030	+.013	−2.7	−0.3	+0.4	−0.4	+0.2	+0.4	−0.21

REMARKS.

1, ≡ in lowlands A; ∞² A — P. **2,** ⊕° 11.0 A — 12 M. **3,** ∞² A; ≺ in W & NW 8.0 P — 9.0 P —. **5,** ∞² A. **6,** ∞² A — P; ⊕° 11.0 A — 1.0 P; ◍° 7.6 P — 7.7 P. **8,** ≡ in lowlands A; ∞² A — P. **9,** ∞² A — P. **10,** ∞² A; ∞ P. **11,** ∞² A — P. **12,** ∞² A — P. **13,** ∞² A — P. **14,** ∞² A — P; ⊕ 11.2 A — 3.5 P. **15,** ≡° in lowlands A; ∞² A — P. **16,** ◍² 0.5 A — 11.9 A; ≡ A — P; ◍° 1.5 P — 2.4 P; ≺ in SW 7.5 P — 8.5 P —; ◍ 10.2 P —. **17,** ◍ — 1.2? A; ≡ A; ⌈≺ 4.9 P — 7.9 P; ◍ 4.8 P —. **18,** ◍ — 9.5 A. **19,** ∞ A, in W P. **20,** ∞ A; ⊕ 7.2 A — 7.4 A; ◍° 2.0 P, 2.8 P —. **21,** ◍ — 8.7 A; ◍° 9.1 A; ≺ 7.7 P —; ≡ P; ⌈≺ 9.2 P —; ◍ 9.0 P —. **22,** ◍ — 3.8? A; ∞ A. **25,** ≡° in lowlands P. **26,** ≡ in lowlands A; ∞² P. **28,** ◍° 5.2? A — 11.6 A; ≡ A. **29,** ≡ P; ◍° 7.5 P —. **30,** ◍ — 8.2 A, 11.0 A — 0.2 P, 2.5 P — 4.3 P; ≡ A — P; ⌒ 5.1 P — 5.6 P.

OCTOBER, 1900.

Date.	Atmospheric Pressure. Inches. A.M. 8.00	P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure. Inch. A.M. 8.00	P.M. 8.00	Relative Humidity. Per cent. A.M. 8.00	P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00	P.M. 8.00	Precipitation, in inches. P.M. 8.00
1	29.65	29.73	57	56	63	54	.46	.45	100	100	10	10	NE 6	E 6	.
2	29.81	29.80	57	55	64	52	.43	.43	94	100	5	10	NE 8	E 6	.
3	29.77	29.68	56	54	57	54	.45	.42	100	100	10	10	NE 6	E 3	.
4	29.61	29.48	55	62	70	53	.43	.55	100	100	10	10	SW 3	SW 6	.00
5	29.41	29.36	63	68	80	60	.53	.62	96	90	9	0	SW 7	SW 5	.00
6	29.49	29.59	53	52	69	51	.40	.39	100	100	10	10●°	NE 6	NE 10	.01
7	29.61	29.51	53	60	62	52	.40	.52	100	100	10●°	10●°	N 4	SE 6	.05
8	29.40	29.40	65	62	78	59	.62	.55	100	100	10	10●°	S 8	N 8	.13
9	29.49	29.46	53	48	62	47	.40	.33	100	100	10●^{2}	10●^{2}	N 7	NE 9	1.47
10	29.37	29.24	43	46	48	42	.28	.31	100	100	10●°	10	N 9	N 8	.60
11	29.07	29.08	44	54	55	42	.25	.19	85	44	9	6	NW 15	NW 12	.14
12	29.26	29.33	55	63	74	49	.30	.37	71	64	0	9	NW 8	W 5	.
13	29.45	29.47	57	59	68	55	.33	.31	71	62	8	10	NE 7	SE 9	.
14	29.25	29.23	54	53	60	51	.42	.40	100	100	10●°	10●°	NE 15	N 5	.64
15	29.27	29.30	53	58	62	51	.40	.40	100	82	6	0	NW 6	SW 3	.02
16	29.16	28.98	55	46	74	46	.32	.31	77	100	0	10●	W 10	N 15	.13
17	29.41	29.42	34	40	49	31	.13	.13	66	53	0	0	NW 14	W 8	.00
18	29.23	29.17	42	51	59	35	.17	.26	61	68	2	8	SW 8	W 7	.
19	29.37	29.51	37	35	51	35	.12	.09	56	44	5	0	N 12	N 7	.05
20	29.63	29.60	33	40	50	27	.11	.15	61	58	0	1	N 5	SW 8	.
21	29.53	29.46	45	52	65	39	.18	.29	62	75	7	0	SW 10	SW 9	.
22	29.51	29.55	54	59	74	49	.29	.45	71	90	2	2	W 8	SW 7	.
23	29.65	29.62	60	61	78	57	.48	.48	95	89	8	3	SW 5	S 11	.
24	29.56	29.62	62	61	77	57	.55	.36	100	69	6	0	W 6	N 8	.06
25	29.82	29.84	54	46	61	44	.29	.28	69	88	0	7	NE 13	E 5	.
26	29.78	29.59	46	52	53	45	.31	.39	100	100	10	10	N 2	S 4	.
27	29.50	29.53	53	52	58	51	.40	.39	100	100	10	10●°	SE 2	NE 7	.03
28	29.54	29.47	50	50	52	49	.36	.36	100	100	10●	10●°	NE 10	NE 9	.71
29	29.41	29.33	50	47	51	47	.36	.32	100	100	10	10	N 6	W 3	.02
30	29.36	29.64	52	45	53	44	.33	.22	89	76	9	10	N 5	E 10	.00
31	29.83	29.81	42	39	53	39	.18	.19	67	76	10	0	E 8	SE 5	.
Means	29.490	29.477	51.2	52.5	62.3	47.3	.345	.352	86.8	84.8	7.0	6.6	7.7	7.2	4.06
'86-00	29.364	29.348	46.9	48.2	57.8	41.7	.297	.288	81.9	78.2	5.5	4.9	6.9	7.2	4.71
Depart.	+.126	+.129	+4.3	+4.3	+5.0	+5.6	+.048	+.064	+4.9	+6.6	+1.5	+1.7	+0.8	±0.0	−0.65

REMARKS.

1, ≡ A — P. 2, ∞ A — P. 3, ≡ A — P. 4, ≡ A — P. 5, ◍° 7.9 A; ∞^{2} A — P. 6, ≡ A — P; ◍° 4.9 P —. 7, ◍° — 10.7? A, 1.6 P — 10.0? P; ≡ A — P. 8, ≡ A; ◍ 7.0 P —. 9, ◍^{2} —; ≡ A — P. 10, ◍° — 8.2 A, 9.2 A — 10.3 A; ≡ A — P; ◍° 1.5 P, 3.6 P; ◍ 5.5 P — 7.5 P, 9.6? P —. 11, ◍° — 1.5? A; ◍ 9.8 A — 0.8 P, 2.8 P — 3.4 P, 3.7 P — 4.5 P; ⌒ 3.2 P; ⌒^{2} 4.6 P — 5.2 P. 12, ⊕^{2} 3.0 P — 4.5 P; ≡ in lowlands P; ◡ 11.5 P — 12 P —. 13, ◡ 12 P — 0.5 A —; ≡ in lowlands A; ⊕^{2} 9.9 A — 11.2 A; ∞^{2} A — P; ◍ 8.8 P —. 14, ◍° —; ≡ A — P. 15, ◍° — 0.5? A; ≡ in lowlands P. 16, ∞^{2} A; ∞ P; ◍ 5.7 P — 8.3 P. 18, ∞ A — P; ◍ 8.6 P — 9.0 P. 20, Dense smoke in lower air A. 21, ∞ A — P. 22, ∞ A — P; ⊕° 10.9 A — 1.1 P. 23, ≡ in lowlands A; ∞^{2} A; ∞ P; ⊕° 7.7 A — 11.2 A; ⊕^{2} 1.6 P — 3.5? P. 24, ◍ 1.7? A — 4.7? A; ≡ A. 26, ≡ A — P; ⚡ in SW 6.3 P — 7.8 P, 10.7 P — 11.5 P. 27, ∞^{2} A; ≡ A — P; ◍° 0.7 P —. 28, ◍ —; ≡ A — P. 29, ◍ — 4.5? A; ≡ A — P. 30, ≡ in lowlands A; ∞ A; ◍ 0.2 P — 5.2 P; ⚡? in SE to SW 11.0 P — 11.5 P.

NOVEMBER, 1900.

Date.	Atmospheric Pressure. Inches. A.M. 8.00	P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure. Inch. A.M. 8.00	P.M. 8.00	Relative Humidity. Per cent. A.M. 8.00	P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00	P.M. 8.00	Precipitation, in inches. P.M. 8.00
1	29.70	29.54	47	58	65	39	.28	.46	87	97	10	8	SE 6	S 9	.00
2	29.49	29.57	61	56	72	57	.50	.21	95	48	8	0	SW 8	NW 9	.00
3	29.60	29.49	44	48	56	43	.20	.31	72	94	10	10	N 8	NE 5	.
4	29.42	29.23	42	45	50	40	.27	.28	100	91	10	6	NE 7	E 4	.
5	29.11	29.05	45	54	59	42	.29	.26	96	63	7	8	NE 5	W 10	.
6	29.26	29.39	40	43	54	38	.17	.15	69	56	0	0	W 6	W 7	.
7	29.43	29.30	43	46	57	40	.18	.30	66	96	0	7	SE 10	SE 11	.
8	29.14	28.95	54	55	65	46	.39	.42	96	98	7	10●	SE 11	S 8	.17
9	28.42	28.59	51	35	55	32	.37	.15	100	76	8	6	E 15	W 17	.95
10	29.03	29.30	35	35	42	30	.11	.11	54	57	2	1	W 17	W 9	.
11	29.47	29.43	32	39	45	29	.12	.18	71	77	7	8	W 7	SW 7	.00
12	29.21	29.00	39	37	47	37	.19	.13	84	63	10	1	NW 5	W 8	.
13	29.02	28.96	34	41	48	32	.12	.18	65	70	1	5	SW 8	S 10	.
14	29.03	29.36	34	31	47	31	.12	.07	66	45	2	0	NW 15	SW 2	.00
15	29.42	29.36	25	30	34	23	.09	.16	69	99	4	0	SW 8	W 7	.06
16	29.66	29.86	21	22	31	21	.06	.05	51	45	0	0	NW 10	NW 10	.
17	29.91	29.75	20	34	38	18	.07	.08	68	44	2	10	NW 6	S 7	.
18	29.52	29.39	46	51	57	31	.22	.23	72	65	7	6	SW 14	SW 12	.05
19	29.53	29.59	54	44	55	42	.39	.29	94	100	10●	10●°	NW 5	E 6	.09
20	29.44	29.34	42	57	59	34	.27	.46	100	100	10	10●	W 8	S 8	.12
21	29.13	28.79	58	58	62	50	.48	.26	100	55	10	0	S 12	SW 19	.16
22	29.25	29.32	40	45	59	39	.15	.21	58	72	8	4	W 14	S 6	.
23	29.12	29.43	54	40	59	40	.39	.14	93	56	8	0	SW 9	NW 12	.04
24	29.66	29.68	34	36	40	33	.11	.17	56	81	9	10*	N 10	SE 9	.00
25	29.39	29.32	40	35	41	33	.25	.19	100	100	10●²	10●°	E 12	NE 13	1.08
26	29.05	28.84	41	36	43	34	.26	.21	100	100	10●	10	NE 18	N 9	1.79
27	28.88	29.07	34	33	36	32	.19	.17	100	90	10●°	10*°	N 9	N 14	.05
28	29.39	29.55	23	29	33	23	.09	.07	74	43	2	3	NW 8	N 2	.00
29	29.55	29.38	30	36	39	25	.11	.19	65	91	10	10	SE 6	SE 9	.00
30	29.29	29.39	35	35	40	34	.20	.19	100	98	10●	10	N 6	N 6	.88
Means	29.314	29.307	40.0	41.5	49.6	34.9	.221	.209	80.7	75.7	6.7	5.8	9.4	8.8	5.44
'86-'00	29.360	29.344	36.9	39.0	47.4	32.0	.191	.194	80.0	75.4	6.0	5.3	7.6	7.6	4.62
Depart.	−.046	−.037	+3.1	+2.5	+2.2	+2.9	+.030	+.015	+0.7	+0.3	+0.7	+0.5	+1.8	+1.2	+0.82

REMARKS.

1, ∞² A; ●° 11.0 A — 11.2 A, 11.8 A; ∞ P; ● 3.1 P — 3.2 P; ●° 5.7 P —. **2,** ●° — ? A. **3,** ∞² A — P. **4,** ≡ A; ◡ 7.7 P — 8.2 P; ◡² 10.2 P — 11.8 P —; ≡² in lowlands P. **5,** ≡² in lowlands A; ∞² A — P. **6,** ∞ A. **7,** ≡ in lowlands A; ◡² 7.5 P — 7.8 P; ◡² 8.0 P — ? P; ⚡ in NW 11.7 P —. **8,** T 4.7 A; ● 4.7? A — 7.9 A; ⚡ 7.7 A — 7.8 A; ⌒ 8.7 A — 8.9 A; ⊕ 10.7 A — 2.6 P; T 2.5 P, 4.3 P; ⚡ 4.8 P — 5.5 P; ⚡ 5.5 P — 9.0 P —; ● 8.0 P — 10.7? P. **9,** ● 4.7? A — 5.8? A; ≡ A; ⚡² 8.1 A — 9.0 A; ● 8.1 A — 8.5 A; ●² ▲² 8.5 A — 8.6 A; ● 8.6 A — 9.7 A; ●° 10.7 A, 0.2 P, ● 2.4 P — 3.2 P: ● ✳ 3.2 P — 6.3 P. **11,** ●° 3.8 P — 4.1 P. **12,** ∞² A — P. **13,** ∞² A, ∞ P. **14,** ● 5.0 A — ? A. **15,** ∞ A; ✳° 10.9 A — 6.2? P; ⊠. **17,** Smoke in lower air A; ✳ 9.3 P — 10.7? P. **18,** ● 0.5? A — 4.0? A; ∞ A — P. **19,** ≡ A — P; ● 4.2? A —. **20,** ● — 1.0? A, 5.8 P —; ≡ A — P. **21,** ● — 0.7? A, 11.9 A — 2.8 P; ●² 5.2 P — 6.3 P; ≡ A — P. **23,** ● 4.2? A — 5.5? A; ∞² A — P. **24,** ∞ in WP; ● ✳ 6.5 P — 11.2? P; ● 11.2? P —. **25,** ●² —; ≡ A — P. **26,** ● — 4.2 P; ≡ A — P. **27,** ≡ A; ●° 0.5? A — 1.9 P; ✳ 1.9 P — 3.3 P, 6.1 P — 11.2 P. **28,** ✳ 0 5? A — 2.0? A. **29,** ≡° in lowlands A; ∞ A; ✳ 8.6 A — 10.2 A; ● 9.5? P —. **30,** ●² — 2.7 P; ≡ A.

DECEMBER, 1900.

Date.	Atmospheric Pressure. Inches.		Air Temperature, in degrees Fahrenheit.				Vapor Pressure. Inch.		Relative Humidity. Per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in inches.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	29.40	29.39	33	39	43	30	.14	.15	74	66	6	6	N 3	W 1	.
2	29.48	29.57	33	38	43	32	.17	.19	88	83	6	6	N 5	N 3	.
3	29.60	29.48	35	40	48	33	.15	.19	72	77	8	10	W 5	SW 6	.
4	29.37	28.59	42	43	45	38	.23	.28	87	100	10	10●	SW 4	E 21	1.12
5	28.60	29.03	29	27	49	25	.15	.12	95	83	9	10	N 17	NW 8	.43
6	29.32	29.48	23	33	34	22	.10	.15	77	80	10	10	NW 9	W 5	.
7	29.50	29.42	33	35	38	32	.13	.11	68	56	9	9	SW 5	SW 6	.
8	29.39	29.25	25	30	35	25	.11	.13	80	84	3	0	N 10	SE 1	.
9	28.88	29.15	35	16	39	16	.17	.04	88	45	8	0	SW 12	W 19	.01
10	29.50	29.51	5	16	18	4	.03	.05	47	49	0	0	W 18	SW 8	.
11	29.42	29.25	21	23	30	15	.07	.12	61	100	7	10*	SW 3	NW 5	.01
12	29.41	29.46	15	21	24	15	.04	.06	48	54	0	6	W 13	S 5	.00
13	29.11	29.00	35	35	42	20	.15	.12	74	59	8	10	SW 13	NW 12	.
14	29.31	29.58	14	8	35	8	.05	.05	58	66	0	0	NW 12	N 9	.
15	29.71	29.72	8	20	22	4	.05	.07	76	65	9*°	7	NW 7	N 5	.00
16	29.66	29.64	16	15	20	14	.09	.06	100	71	10*	2	N 9	N 9	.04
17	29.63	29.58	7	25	27	5	.05	.04	77	33	9	0	NW 8	N 4	.
18	29.52	29.44	19	30	39	17	.04	.11	37	70	0	0	SW 4	SW 9	.
19	29.32	29.35	37	38	45	27	.22	.14	99	63	9	0	SW 9	W 8	.
20	29.27	29.24	31	34	42	29	.15	.13	89	66	3	0	SW 7	NW 10	.
21	29.29	29.13	24	30	34	24	.10	.13	76	81	4	10	N 8	NE 12	.00
22	29.28	29.45	24	37	43	23	.10	.09	77	39	6	0	N 7	SW 7	.
23	29.44	29.32	34	48	53	30	.19	.31	98	93	10	10	SW 11	S 14	.
24	29.14	29.14	52	46	55	46	.39	.29	100	92	10	2	SW 8	SW 7	.34
25	29.12	29.10	34	36	46	33	.14	.13	72	64	2	8	NW 7	SW 8	.00
26	29.14	29.25	29	25	36	25	.12	.07	75	55	7	0	SW 8	W 11	.00
27	29.43	29.52	19	25	30	17	.06	.06	58	48	7	0	NW 8	W 6	.
28	29.33	29.06	28	30	33	22	.11	.13	75	82	10	0	SW 9	W 9	.05
29	29.25	29.28	18	26	31	18	.07	.07	69	54	0	0	W 8	SW 8	.
30	29.28	29.17	24	35	43	22	.06	.17	53	88	2	10	SW 10	SW 8	.
31	29.00	29.13	34	37	38	33	.19	.22	100	100	10●	10	N 6	SW 6	.46
Means	29.326	29.312	26.3	30.4	37.5	22.7	.123	.128	75.7	70.0	6.2	4.7	8.5	8.1	2.46
'86-00	29.345	29.337	26.6	29.4	37.4	22.3	.126	.131	75.6	70.7	5.8	5.8	7.9	8.0	3.45
Depart.	−.019	−.025	−0.3	+1.0	+0.1	+0.4	−.003	−.003	+0.1	−0.7	+0.4	−1.1	+0.6	+0.1	−0.99

REMARKS.

1, ⌴^{2} A; ∞ A — P. **2,** ∞ A; ∞^{2} P. **3,** ≡° in lowlands A; ⌴ A; ∞ A — P; ⊽^{2} 5.7 P — 11.2 P —. **4,** ●° 8.5 A; ∞^{2} A — P; ≡ P; ◍ 10.8 A —. **5,** ● — 4.7? A; ⚹ 4.7? A — 7.4 A, 9.6 A — 6.2 P; ⊠. **6,** ⊕° 7.4 A — 11.3 A; ∞ A — P. **7,** ∞ A — P. **8,** ∞ A — P. **9,** ∞^{2} A; ◍ 11.0 A — 11.0 A; ◍ ⚹ 11.0 A — 11.2 A; ⚹^{2} 11.2 A — 11.3 A. **11,** ∞ A — P; ⊕° 2.4 P — 3.1 P; ⚹ 5.8 P — 9.3 P. **13,** ∞ A; ∞^{2} P. **15,** ⚹° 7.6 A — 2.9 P; ∞ A — P. **16,** ⚹ 4.5? A — 10.6 A; ⊠. **17,** ⊠. **18,** Dense smoke in lower air A, ⊠. **19,** ⌴^{2} A; ∞^{2} A. **20,** ⌴^{2} A; ∞^{2} A — P. **21,** ⚹° 10.3 A — 11.2 A; ∞ A — P. **22,** Smoke in lowlands A; Dense smoke in N & NW all day. **23,** ⌴^{2} A; ≡ A; ◍ 11.8 P —. **24,** ◍ — 4.0? A; ≡ A; ∞ A — P. **25,** ≡ in lowlands A; ⚹° 7.7 P. **26,** ∞ A; ⚹ 11.9 A — 12 M. **27,** ⊕° 7.7 A — 9.5? A. **28,** ∞^{2} A; ⚹ 9.6 A — 1.4 P; ◍ 1.4 P — 3.8 P; ⚹ ◍ 3.8 P — 4.0 P; ◍ 4.0 P — 4.0 P; ⊠. **30,** ∞^{2} A — P; ◍ 9.2 P —. **31,** ◍ — 3.5? A, 7.2 A — 11.3 A, 1.8 P; ≡ A — P.

TABLE VII.

SUMMARY FOR 1900.

IN ENGLISH AND METRIC MEASURES.

$\lambda=71° 6' 53''$ W. $\phi=42° 12' 44''$ N. H=640 ft., or 195.1 m.

The correction to reduce to standard gravity of Lat. 45°, —.007 *in.* at 30 *in.*, or —0.18 *mm.* at 762 *mm.*, has not been applied to the barometer readings, which are corrected to 32° F., but are not reduced to sea level.

Month.	Atmospheric Pressure.								Air Temperature.			
	Mean Corrected to 24 Hours.		Maximum.			Minimum.			8 A.M.		8 P.M.	
	Inches.	Mm.	Inches.	Mm.	Date.	Inches.	Mm.	Date.	Fahr. °	Cent. °	Fahr. °	Cent. °
January ...	29.285	743.8	29.97	761.2	17	28.45	722.6	21	24.7	−4.1	27.2	−2.7
February ..	29.244	742.8	30.02	762.5	28	28.07	713.0	25	22.4	−5.3	26.8	−2.9
March	29.226	742.3	29.87	758.7	5	28.41	721.6	2	26.9	−2.8	29.9	−1.2
April	29.260	743.2	29.79	756.7	17	28.73	729.7	7	43.8	6.6	44.1	6.7
May	29.257	743.1	29.70	754.4	29	28.62	726.9	3	51.9	11.1	51.9	11.1
June	29.259	743.2	29.57	751.1	13	28.91	734.3	29	64.9	18.3	63.1	17.3
July	29.275	743.6	29.53	750.1	22	28.82	732.0	8	70.6	21.4	69.5	20.8
August ...	29.347	745.4	29.62	752.3	5	29.10	739.1	11	68.0	20.0	67.3	19.6
September .	29.382	746.3	29.70	754.4	1	28.64	727.5	12	61.9	16.6	60.8	16.0
October ...	29.471	748.5	29.86	758.4	31	28.89	733.8	16	51.2	10.7	52.5	11.4
November .	29.298	744.2	29.91	759.7	17	28.26	717.8	9	40.0	4.4	41.5	5.3
December..	29.308	744.4	29.75	755.7	15	28.19	716.0	5	26.3	−3.2	30.4	−0.9
Year	29.301	744.2	30.02	762.5	28, II	28.07	713.0	25, II	46.0	7.8	47.1	8.4
1886–1900.	29.315	744.6	30.21	767.3	II,'87	27.90	708.7	II,'95	44.4	6.9	45.7	7.6
Departures.	−.014	−0.4							+1.6	+0.9	+1.4	+0.8

Month.	Vapor Pressure.						Relative Humidity.			Cloudiness.		
	8 A.M.		8 P.M.		Mean.		8 A.M.	8 P.M.	Mean.	8 A.M.	8 P.M.	Mean.
	Inch.	Mm.	Inch.	Mm.	Inch.	Mm.	Per cent.	Per cent.	Per cent.	0—10.	0—10.	0—10.
January ...	.118	3.00	.126	3.20	.122	3.10	77.3	74.3	73.7	5.7	5.5	5.6
February ..	.107	2.72	.116	2.95	.111	2.82	72.7	66.9	67.9	5.9	5.3	5.6
March	.113	2.87	.111	2.82	.112	2.85	67.9	60.8	62.7	5.3	3.9	4.6
April	.188	4.77	.191	4.85	.189	4.80	63.6	64.5	62.0	4.6	4.3	4.4
May	.265	6.73	.272	6.91	.268	6.81	65.7	69.5	65.5	6.8	5.8	6.3
June	.455	11.56	.437	11.10	.446	11.33	73.2	74.5	73.8	4.8	5.5	5.1
July	.557	14.15	.536	13.61	.546	13.87	74.6	77.1	68.0	4.0	5.2	4.6
August ...	.552	14.02	.541	13.74	.547	13.89	80.4	80.0	77.2	5.2	4.5	4.8
September .	.456	11.58	.444	11.28	.450	11.43	81.1	82.9	78.9	5.5	4.4	4.9
October ...	.345	8.76	.352	8.94	.348	8.84	86.8	84.8	83.0	7.0	6.6	6.8
November .	.221	5.61	.209	5.31	.215	5.46	80.7	75.7	75.8	6.7	5.8	6.2
December..	.123	3.12	.128	3.25	.125	3.17	75.7	70.0	69.4	6.2	4.7	5.4
Year	.292	7.41	.289	7.33	.290	7.36	75.0	73.4	71.5	5.6	5.1	5.4
1886–1900	.284	7.21	.284	7.21	.284	7.21	77.6	75.3	74.2	5.7	5.2	5.3
Departures.	+.008	+0.20	+.005	+0.12	+.006	+0.15	−2.6	−1.9	−2.7	−0.1	−0.1	+0.1

FEATURES OF THE MONTHS. — Warmest January since 1891; mean relative humidity below normal for the first eight months of the year and decidedly below in March and May; heavy monthly rainfalls in February and May; cool May; high mean temperature for each month from June to November; warmest July and October in more than 15 years; a deficiency of rainfall from July to October with a marked deficiency in August; mean wind velocity at 8 A.M. and 8 P.M. above normal for every month of the year except August and markedly above normal during the first 7 months, but the mean hourly movement of the wind was below normal August to September and in December.

TABLE VII.

SUMMARY FOR 1900.

IN ENGLISH AND METRIC MEASURES.

h_t = 6 ft., or 1.8 m., in summer, and 16 ft., or 4.9 m., in winter. h_r = 1 ft., or 0.3 m.

Month.	Air Temperature.													
	Mean Corrected to 24 Hours.		Mean Max.		Mean Min.		Mean of Max. and Min.		Maximum.			Minimum.		
	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Date.	Fahr.	Cent.	Date.
	°	°	°	°	°	°	°	°	°	°		°	°	
January ...	27.1	−2.7	37.4	3.0	18.3	−7.6	27.8	−2.3	56	13.3	20	4	−15.6	4
February ..	25.9	−3.4	34.9	1.6	18.1	−7.7	26.5	−3.1	56	13.3	13	− 8	−22.2	27
March	31.7	−0.2	41.5	5.3	20.9	−6.2	31.2	−0.4	55	12.8	16	3	−16.1	12
April	45.0	7.2	54.7	12.6	36.6	2.6	45.6	7.6	77	25.0	30	22	− 5.6	10
May	53.0	11.7	64.7	18.2	42.4	5.8	53.5	11.9	93	33.9	15	28	− 2.2	11
June	64.9	18.3	76.3	24.6	56.0	13.3	66.1	18.9	90	32.2	27	43	6.1	5
July	71.0	21.7	81.4	27.4	61.3	16.3	71.3	21.8	95	35.0	18	50	10.0	1
August ...	68.8	20.4	79.3	26.3	60.9	16.1	70.1	21.2	96	35.6	26	48	8.9	4
September .	62.6	17.0	73.4	23.0	55.0	12.8	64.2	17.9	92	33.3	6	41	5.0	19
October ...	53.2	11.8	62.3	16.8	47.3	8.5	54.8	12.7	80	26.7	5	27	− 2.8	20
November .	42.0	5.6	49.6	9.8	34.9	1.6	42.2	5.7	72	22.2	2	18	− 7.8	17
December..	29.5	−1.4	37.5	3.1	22.7	−5.2	30.1	−1.1	55	12.8	24	4	−15.6	15
Year......	47.9	8.8	57.8	14.3	39.5	4.2	48.6	9.2	96	35.6	26,VIII	− 8	−22.2	27, II
1886–1900.	46.2	7.9	55.4	13.0	38.6	3.7	47.0	8.3	97	36.1	VII,'94	−16	−26.7	II,'96
Departures	+1.7	+0.9	+2.4	+1.3	+0.9	+0.5	+1.6	+0.9						

Month.	Precipitation.					Number of Days with								
	Total Monthly.		Maximum Daily.			⊙✳ ≥.01 Inch.	⊙✳ ≥1.0 Mm.	✳ ≥0.1 Inch.	▲	⊼	≡	Clear.	Cloudy.	≥20 Metres.
	Inches.	Mm.	Inches.	Mm.	Date.									
January ...	4.25	107.9	1.46	37.1	12	15	10	4	0	0	6	6	8	4
February ..	6.82	173.2	1.55	39.4	13	11	10	3	0	1	8	6	12	5
March	4.62	117.4	1.95	49.5	16	10	8	7	0	0	3	10	8	3
April	1.98	50.3	.54	13.7	19	12	10	0	0	0	7	11	10	0
May	5.61	142.5	2.25	57.1	3	12	10	0	1	2	4	1	12	1
June	4.23	107.4	1.57	39.9	22	10	9	0	2	5	2	8	9	1
July	3.02	76.7	1.71	43.4	26	10	8	0	0	4	1	3	8	0
August ...	1.36	34.5	.33	8.4	16	10	7	0	0	4	5	1	8	0
September .	4.29	109.0	2.04	51.8	18	7	7	0	0	2	6	6	9	1
October ...	4.06	103.1	1.47	37.3	9	14	10	0	0	0	14	5	17	3
November .	5.44	138.2	1.79	45.5	26	12	12	4	1	2	9	5	18	4
December..	2.46	62.5	1.12	28.5	4	8	6	5	0	0	5	6	11	4
Year......	48.14	1222.7	2.25	57.1	3,V	131	107	23	4	20	70	68	130	26
1886–1900.	47.45	1205.3	5.92	150.4	X, '95	132	106	28	0	20	86	94	130	15
Departures	+0.69	+17.4				−1	+1	−5	+4	0	−16	−26	0	+11

Special Phenomena.—April 8, a series of cumulus clouds were observed forming over a large forest fire in W. Falmouth. A frost was reported in the lowlands on May 29 and is the latest observed in 16 years. On May 28 there was a partial eclipse of the sun which caused some small changes in temperature, pressure and wind. On June 22 there fell some hailstones as large as ⅜ inch. On June 30 a westerly gale caused immense clouds of dust to fill the air and rendered it very uncomfortable out of doors. On July 20 a very dense smoke from distant forest fires filled the air for about 2 hours during the afternoon and then suddenly cleared away. On November 4, pear blossoms were picked from a tree on the south side of Blue Hill. On November 9 there was a severe thunderstorm accompanied by hail between 8 and 9 A.M.

TABLE VII.

SUMMARY FOR 1900.

Month.	Number of Hours Wind blew from							
	N.	NE.	E.	SE.	S.	SW.	W.	NW.
January	81	27	51	35	86	158	159	147
February	73	42	42	66	81	58	206	104
March	43	46	28	49	74	95	180	229
April	95	54	26	20	71	81	104	269
May	50	138	42	21	73	103	175	142
June	38	92	34	31	121	184	122	98
July	47	29	29	19	106	214	202	98
August	115	88	58	49	115	120	104	95
September	78	87	59	69	107	117	98	105
October	118	173	61	24	61	107	83	117
November	86	80	40	49	98	129	167	71
December	112	14	12	4	47	212	195	148
Year	936	870	482	436	1040	1578	1795	1623
1886–1900	885	831	562	546	1177	1479	1672	1611
Departures	+51	+39	−80	−110	−137	+99	+123	+12

TABLE VII.

SUPPLEMENTARY.

H_a = 34 ft., or 10.4 m. above ground.

Month.	Bright Sunshine.		Wind.					
			Mean Velocity.		Maximum Velocity.			
	Duration in Hours.	Per cent. of Possible.	Miles per Hour.	Metres per Second.	Miles per Hour.	Metres per Second.	Direction.	Date.
January	142.6	50	18.2	8.1	56	25	W	26
February	121.4	42	20.2	9.0	63	28	SE	25
March	209.7	58	18.9	8.4	67	30	S	16
April	209.0	54	16.8	7.5	43	19	NW	6
May	223.4	51	16.0	7.2	45	20	N	15
June	282.8	64	14.7	6.6	47	21	W	28
July	309.3	69	14.8	6.6	43	19	NW	14
August	245.7	59	11.5	5.1	29	13	SW	16
September	200.8	56	13.7	6.1	56	25	SW	12
October	129.8	39	15.3	6.8	49	22	NW	17
November	116.2	41	17.9	7.9	51	23	W	10
December	149.3	54	16.3	7.3	56	25	NW	5
Year	2340.0	53	16.1	7.2	67	30	S	16, III
1886–1900	2166.9	50	14.7	6.6	72	32	SE	I, '93
Departures	+173.1	+3	+1.4	+0.6				

N.B.—True wind velocities are recorded which are about 18 per cent. lower than those recorded by a Robinson anemometer with the factor 3. The velocities for preceding years given here are corrected in the same ratio. The maximum velocity is for an interval of five minutes. No calms of one hour's duration occurred, there being none in the average from 1886 to 1900.

TABLE VIII.

SUMMARY FOR 1900 AT THE BASE STATION.

$\lambda = 71° 7' 10''$ W. $\phi = 42° 13' 20''$ N. H = 210 ft., or 64 m. h_t = 6 ft, or 1.8 m. h_r = 1 ft., or 0.3 m.

Month.	Air Temperature, in degrees Fahrenheit.									Precipitation in Inches.	
	Mean Max.	Mean Min.	Mean of Max. and Min.	Mean Range.	Max.	Date.	Min.	Date.	Range.	Rain and Melted Snow.	Unmelted Snow.
January	38.3	19.3	28.8	19.0	57	20	0	4	57	4.38	11
February	36.5	19.5	28.0	17.0	60	13	−5	27	65	7.30	12
March	42.9	22.6	32.8	20.3	57	19	6	12	51	5.06	10
April	56.5	36.9	46.7	19.6	78	30	23	10	55	2.07	00
May	65.6	43.0	54.3	22.6	93	15	28	11	65	5.57	.
June	76.3	55.9	66.1	20.4	90	27	39	5	51	3.52	.
July	80.8	62.6	71.7	18.2	93	18	51	1	42	2.97	.
August	78.7	61.3	70.0	17.4	93	26	46	4	47	1.62	.
September	73.2	55.0	64.1	18.2	91	6	39	19	42	4.44	.
October	62.8	48.5	55.6	14.3	79	5	27	20	52	4.01	.
November	51.1	35.3	43.2	15.8	73	2	15	17	58	5.04	1
December	39.1	23.6	31.3	15.5	56	24	6	17	50	2.51	3
Year	58.5	40.3	49.4	18.2	93	18, VII	− 5	27, II	98	48.49	37
1887–1900*	56.8	39.3	48.1	17.5	95	VII, '98	−13	II, '96	108	48.71	61
Departures	+1.7	+1.0	+1.3	+0.7						−0.22	−24

* The mean temperatures for 1892 and 1893 are missing.

N. B. — Under " Unmelted Snow," .00 indicates amounts less than 0.1 inch, and a dot (.) absence of snow.

TABLE IX.

SUMMARY FOR 1900 AT THE VALLEY STATION.

$\lambda = 71° 7' 30''$ W. $\phi = 42° 14' 0''$ N. H = 50 ft., or 15 m. h_t = 6 ft., or 1.8 m. h_r = 1 ft., or 0.3 m.

Month.	Air Temperature, in degrees Fahrenheit.									Precipitation, in Inches.
	Mean Max.	Mean Min.	Mean of Max and Min.	Mean Range.	Max.	Date.	Min.	Date.	Range.	
January	39.0	16.9	27.9	22.1	57	19	−13	4	70	4.39
February	33.7	16.6	25.1	17.1	58	13	− 4	27	62	7.37
March	43.2	22.8	33.0	20.4	55	19	7	12	48	4.94
April	57.5	34.0	45.7	23.5	80	30	22	10	58	2.20
May	66.3	41.4	53.8	24.9	94	15	27	11	67	5.30
June	79.1	53.6	66.3	25.5	92	27	39	5	53	2.51
July	84.4	58.4	71.4	26.0	96	18	46	2	50	2.83
August	81.8	57.3	69.5	24.5	97	26	40	4	57	1.68
September	75.4	49.8	62.6	25.6	93	6	33	20	60	4.42
October	64.0	45.4	54.7	18.6	82	5	23	20	59	4.10
November	51.7	32.3	42.0	19.4	74	2	10	17	64	5.48
December	39.7	20.3	30.0	19.4	57	24	1	18	56	2.67
Year	59.6	37.4	48.5	22.2	97	26, VIII	−13	4, I	110	47.89
1889–1900	58.2	37.3	47.7	20.9	98	VII, '98	−22	II, '93	120	45.97
Departures	+1.4	+0.1	+0.8	+1.3						+1.92

TABLE X.

SUMMARY OF VISIBILITY OF OBJECTS IN DIFFERENT AZIMUTHS FOR 1900.

Month.	Number of times visible at 8 A.M.						Number of times visible at 2 P.M.						No. of times at 8 P.M.	
	Fall River chimneys.	Attleboro' Standpipe.	Marlboro' Standpipe.	Lawrence Standpipe.	Thatcher's Lights.	Standish Monument.	Fall River chimneys.	Attleboro' Standpipe.	Marlboro' Standpipe.	Lawrence Standpipe.	Thatcher's Lights.	Standish Monument.	Thatcher's Lights.	Minot's Light.
January	0	8	3	1	0	0	3	12	8	3	0	5	6	18
February	0	6	2	0	0	1	5	10	6	2	1	5	7	20
March	2	9	3	2	0	4	5	13	10	8	1	8	12	25
April	3	12	10	4	0	7	11	19	14	10	2	12	11	22
May	2	7	3	2	0	5	4	11	8	5	1	10	8	19
June	2	5	3	1	1	3	6	13	9	0	1	9	9	20
July	2	8	6	1	0	5	4	19	10	4	0	11	8	26
August	0	6	1	0	1	4	3	17	10	1	4	11	8	25
September	0	3	1	0	0	2	5	12	8	1	1	7	8	22
October	1	5	2	1	0	1	4	10	7	2	0	6	6	15
November	1	7	3	0	0	3	4	14	5	3	0	8	7	22
December	0	5	1	0	0	1	1	11	8	0	0	8	3	22
Year	13	81	38	12	2	36	55	161	103	39	11	100	93	256

N. B. — In the daytime the objects observed are towers or similiar structures; in the evening the two lights on Thatcher's Island and the light on Minot's Ledge are observed, the two former being fixed white lights of the first order, and the latter a flashing white light of the second order.

The distances from Blue Hill, the azimuths from true south, and the approximate heights of the tops of these objects above the sea are as follows: Fall River chimneys, 35.5 miles, 1°, 250 feet; Attleboro' Standpipe, 20.5 miles, 26°, 300 feet; Marlboro' Standpipe, 24.5 miles, 113°, 735 feet; Lawrence Standpipe, 34.5 miles, 174°, 417 feet; Thatcher's Island Light Towers, 40 miles, 223°, 163 feet; Minot's Ledge Light, 18.5 miles, 251°, 84 feet; Standish Monument, 26 miles, 302°, 300 feet. The sea horizon is distant 34 miles.

TABLE XI.

GENERAL SUMMARY FOR THE LUSTRUM 1896–1900.

Month.	Mean Number of Hours Wind was								
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.
January	109	29	34	34	74	115	164	185	0
February	69	44	44	45	72	84	185	133	0
March	62	61	53	58	100	78	158	174	0
April	75	101	60	33	78	90	116	167	0
May	65	120	65	41	134	115	102	102	0
June	53	91	46	32	93	161	133	111	0
July	36	57	59	33	141	210	133	75	0
August	72	90	46	50	118	146	127	95	0
September	62	79	43	61	93	145	113	124	0
October	103	126	69	31	85	104	104	123	0
November	91	49	39	42	81	111	133	174	0
December	91	22	34	32	65	164	189	147	0
Year	888	869	592	492	1134	1523	1657	1610	0

Month.	Sunshine.		Wind Velocity.					
			Mean.		Maximum for Five Minutes.			
	Mean Duration in Hours.	Percent. of possible.	Miles per Hour.	Metres per Second.	Miles per Hour.	Metres per Sec.	Direction.	Date.
January	141.2	49	17.1	7.6	61	27	SE	21,'97
February	138.6	48	17.9	8.0	63	28	SE	25,'00
March	170.4	47	17.2	7.7	67	30	S	16,'00
April	215.3	56	15.9	7.1	51	23	NE	28,'98
May	219.2	50	14.8	6.6	49	22	S	13,'97
June	253.6	58	13.9	6.2	47	21	W	28,'00
July	258.1	58	13.5	6.0	57	25	S	14,'97
August	241.3	58	11.5	5.1	40	18	W	17,'98
September	207.8	58	13.9	6.2	56	25	SW	12,'00
October	151.3	46	15.1	6.7	49	22	NW	17,'00
November	121.9	43	16.5	7.4	58	26	N	27,'98
December	142.4	52	16.2	7.3	60	27	SE	5,'98
Year	2261.1	52	15.3	6.8	67	30	S	Mar. 16,'00

N.B. — True wind velocities are recorded which are about 18 per cent. lower than those recorded by a Robinson anemometer with the factor 3. The maximum velocity is for an interval of five minutes.

TABLE XI.

GENERAL SUMMARY FOR THE LUSTRUM 1896–1900.

IN ENGLISH AND METRIC MEASURES.

$\lambda = 71° 6' 53''$ W. $\phi = 42° 12' 44''$ N. H=640 ft., or 195.1 m.

The correction to reduce to standard gravity of Lat. 45°, —.007 *in.* at 30 *in.*, or —0.18 *mm.* at 762 *mm.*, has not been applied to the barometer readings, which are corrected to 32° F., but are not reduced to sea level.

Month.	Atmospheric Pressure. Mean Corrected to 24 Hours.		Maximum.			Minimum.			Air Temperature. 8 A.M.		8 P.M.	
	Inches.	Mm.	Inches.	Mm.	Date.	Inches.	Mm.	Date.	Fahr.	Cent.	Fahr.	Cent.
									°	°	°	°
January . . .	29.322	744.8	30.09	764.3	2,'99	28.23	717.0	28,'97	21.7	−5.7	25.1	−3.8
February . .	29.251	743.0	30.02	762.5	28,'00	27.96	710.2	1,'98	22.9	−5.1	26.3	−3.2
March	29.293	744.0	30.13	765.3	1,'97	28.20	716.3	19,'99	29.7	−1.3	32.5	0.3
April	29.314	744.6	29.93	760.2	13,'97	28.73	729.7	7,'00	42.6	5.9	43.3	6.3
May	29.290	744.0	29.72	754.9	7,'96	28.62	726.9	3,'00	54.1	12.3	53.1	11.7
June	29.281	743.7	29.68	753.9	25,'96	28.78	731.0	25,'98	62.6	17.0	62.2	16.8
July	29.313	744.5	29.78	756.4	12,'98	28.82	732.0	8,'00	68.6	20.3	67.8	19.9
August . . .	29.324	744.8	29.66	753.4	29,'99	28.94	735.1	11,'97	66.4	19.1	66.2	19.0
September .	29.374	746.1	29.79	756.7	16,'99	28.64	727.5	12,'00	59.4	15.2	59.2	15.1
October . . .	29.432	747.6	29.97	761.2	3,'97	28.77	730.8	22,'98	48.7	9.3	50.1	10.1
November .	29.334	745.1	30.09	764.3	23,'96	28.26	717.8	9,'00	37.6	3.1	39.9	4.4
December. .	29.327	744.9	30.15	765.8	27,'96	28.19	716.0	5,'00	26.5	−3.1	29.4	−1.4
Year	29.321	744.7	30.15	765.8	Dec. 27,'96	27.96	710.2	Feb. 1,'98	45.1	7.2	46.2	7.9

Month.	Vapor Pressure. 8 A.M.		8 P.M.		Mean.		Relative Humidity. 8 A.M.	8 P.M.	Mean.	Cloudiness. 8 A.M.	8 P.M.	Mean.
	Inch.	Mm.	Inch.	Mm.	Inch.	Mm.	Per cent.	Per cent.	Per cent.	0—10.	0—10.	0—10.
January . . .	.102	2.59	.110	2.79	.106	2.69	73.3	69.6	69.2	5.7	5.2	5.5
February . .	.107	2.72	.112	2.85	.109	2.77	74.6	68.2	69.5	5.9	5.2	5.5
March	.133	3.38	.136	3.45	.134	3.40	73.4	68.9	69.5	6.0	5.0	5.5
April	.188	4.77	.189	4.80	.188	4.77	66.5	65.4	63.3	4.8	4.5	4.6
May	.308	7.82	.308	7.82	.308	7.82	71.9	74.7	71.2	6.2	6.1	6.1
June	.439	11.15	.435	11.05	.437	11.10	77.0	77.4	75.4	5.6	5.8	5.7
July	.572	14.53	.558	14.17	.565	14.35	81.6	82.5	79.2	5.6	5.7	5.6
August . . .	.548	13.92	.541	13.74	.544	13.82	83.8	83.5	80.2	5.5	4.9	5.2
September .	.428	10.87	.435	11.05	.431	10.95	82.0	83.5	79.6	5.0	4.6	4.8
October . . .	.300	7.62	.311	7.90	.305	7.75	83.1	81.2	79.3	5.9	5.1	5.5
November .	.196	4.98	.201	5.11	.198	5.03	80.0	75.5	75.3	6.2	5.6	5.9
December. .	.126	3.20	.127	3.23	.126	3.20	75.3	69.7	70.5	5.5	5.0	5.2
Year	.287	7.29	.288	7.33	.287	7.30	76.9	75.0	73.6	5.7	5.2	5.4

TABLE XI.

GENERAL SUMMARY FOR THE LUSTRUM 1896–1900.

IN ENGLISH AND METRIC MEASURES.

h_t = 6 ft., or 1.8 m., in summer, and 16 ft., or 4.9 m., in winter. h_r = 1 ft., or 0.3 m.

Month.	Air Temperature.															
	Mean Corrected to 24 Hours.		Mean Max.		Mean Min.		Mean of Max. and Min.		Maximum.			Minimum.				
	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Date.	Fahr.	Cent.	Date.		
	°	°	°	°	°	°	°	°	°	°		°	°			
January ...	24.6	−4.1	33.3	0.7	17.4	−8.1	25.3	−3.7	57	13.9	5,'97	−14	−25.6	6,'96		
February ..	26.0	−3.3	33.9	1.1	19.2	−7.1	26.5	−3.1	56	13.3	13,'00	−16	−26.7	17,'96		
March	32.2	0.1	41.5	5.3	25.1	−3.8	33.3	0.7	63	17.2	10,'98	1	−17.2	1,'97		
April	44.0	6.7	54.7	12.6	35.4	1.9	45.0	7.2	87	30.6	16,'96	18	− 7.8	4,'98		
May	54.7	12.6	65.6	18.7	45.5	7.5	55.5	13.1	93	33.9	10,'96	28	− 2.2	11,'00		
June	63.3	17.4	74.0	23.3	54.4	12.4	64.2	17.9	91	32.8	6,'99	42	5.6	2,'97		
July	69.2	20.7	79.0	26.1	61.0	16.1	70.0	21.1	97	36.1	3,'98	50	10.0	1,'00		
August ...	67.4	19.7	77.3	25.2	60.0	15.6	68.6	20.3	96	35.6	26,'00	48	8.9	4,'00		
September .	60.6	15.9	70.9	21.6	52.8	11.6	61.8	16.6	92	33.3	6,'00	33	0.6	28,'97		
October ...	50.8	10.4	59.4	15.2	43.7	6.5	51.5	10.8	86	30.0	16,'97	27	− 2.8	20,'00		
November .	40.1	4.5	48.1	8.9	33.2	0.7	40.6	4.8	72	22.2	2,'00	7	−13.9	24,'97		
December..	29.2	−1.6	36.7	2.6	22.7	−5.2	29.7	−1.3	62	16.7	12,'99	− 5	−20.6	14,'98		
Year......	46.8	8.2	56.2	13.4	39.2	4.0	47.7	8.7	97	36.1	July 3,'98	−16	−26.7	Feb. 17,'96		

Month.	Precipitation.					Number of Days with									Wind ≥20 Metres.*
	Total Monthly.		Maximum Daily.			●✱ ≥.01 Inch.	●✱ ≥1.0 Mm.	✱ ≥0.1 Inch.	▲	⌈↖	≡	Clear.	Cloudy.		
	Inches.	Mm.	Inches.	Mm.	Date.										
January ...	4.13	104.9	2.18	55.4	28,'97	10	7	6	0	0	5	8	11	3	
February ..	4.68	118.9	2.42	61.5	21,'98	11	10	6	0	0	5	8	12	3	
March	4.54	115.3	1.95	49.5	16,'00	13	11	8	0	0	9	8	14	4	
April	2.81	71.4	2.51	63.7	24,'98	11	10	1	0	1	6	9	9	1	
May	3.59	91.2	2.25	57.1	3,'00	12	10	0	0	3	7	5	13	1	
June	3.24	82.3	1.57	40.0	22,'00	10	8	0	0	3	6	5	11	0	
July	4.61	117.1	3.14	79.8	13,'98	12	9	0	0	5	7	5	10	0	
August ...	3.58	90.9	1.92	48.8	24,'97	10	8	0	0	5	7	4	9	0	
September .	5.46	138.7	4.57	116.1	20,'99	9	8	0	0	3	8	9	10	0	
October ...	3.80	96.5	2.17	55.1	13,'96	10	8	0	0	0	9	7	14	1	
November .	5.11	129.8	1.92	48.8	27,'98	13	11	4	0	1	8	5	14	3	
December..	2.52	64.0	1.21	30.7	14,'97	9	6	3	0	0	5	7	11	2	
Year......	48.07	1221.0	4.57	116.1	Sept. 20,'99	130	106	28	1	21	82	80	138	18	

* True wind velocities are recorded which are about 18 per cent. lower than those recorded by a Robinson anemometer with the factor 3.

TABLE XII.

GENERAL SUMMARY FOR THE LUSTRUM 1896–1900 AT THE BASE STATION.

$\lambda = 71° 7' 10''$ W. $\phi = 42° 13' 20''$ N. H = 210 ft., or 64 m. h_t = 6 ft, or 1.8 m. h_r = 1 ft., or 0.3 m.

Month.	Air Temperature, in degrees Fahrenheit.									Precipitation in Inches.	
	Mean Max.	Mean Min.	Mean of Max. and Min.	Mean Range.	Max.	Date.	Min.	Date.	Range.	Rain and Melted Snow.	Unmelted Snow.
January	34.6	18.3	26.5	16.4	58	5,'97	−11	6,'96	69	4.13	16
February	35.3	19.9	27.6	15.4	60	13,'00	−13	17,'96	73	4.65	18
March	43.0	26.1	34.6	16.8	65	13,'98	2	1,'97	63	4.68	14
April	56.2	36.1	46.1	20.1	86	16,'96	19	4,'98	67	3.02	1
May	66.5	46.2	56.3	20.3	93	15,'00	28	11,'00	65	3.52	.00
June	73.9	55.3	64.5	18.6	91	6,'99	39	5,'00	52	3.06	.
July	78.8	62.2	70.5	16.6	95	3,'98	48	11,'98	47	4.50	.
August	77.2	59.9	68.6	17.3	93	26,'00	46	4,'00	47	3.61	.
September	70.9	53.1	62.0	17.8	91	6,'00	34	28,'97	57	5.20	.
October	60.6	44.3	52.4	16.4	87	16,'97	27	22,'99	60	3.71	.
November	49.8	33.3	41.6	16.5	73	2,'00	6	24,'97	57	5.00	8
December	38.1	23.4	30.5	14.6	64	12,'99	− 6	14,'98	70	2.61	6
Year	57.1	39.8	48.4	17.2	95	VII,'98	−13	II,'96	108	47.69	63

N. B. — Under "Unmelted Snow," .00 indicates amounts less than 0.1 inch, and a dot (.) absence of snow.

TABLE XIII.

GENERAL SUMMARY FOR THE LUSTRUM 1896–1900 AT THE VALLEY STATION.

$\lambda = 71° 7' 30''$ W. $\phi = 42° 14' 0''$ N. H = 50 ft., or 15 m. h_t = 6 ft., or 1.8 m. h_r = 1 ft., or 0.3 m.

Month.	Air Temperature, in degrees Fahrenheit.									Precipitation, in Inches.
	Mean Max.	Mean Min.	Mean of Max and Min.	Mean Range.	Max.	Date.	Min.	Date.	Range.	
January	35.1	16.3	25.5	19.3	57	5,'97	−14	2,'99	71	3.89
February	35.1	17.2	26.1	18.0	58	13,'00	−20	15,'99	78	5.13
March	43.3	25.8	34.5	17.5	64	13,'98	3	1,'97	61	4.37
April	56.7	34.5	45.6	22.2	87	16,'96	18	4,'98	69	2.85
May	67.4	44.2	55.8	23.2	94	10,'96	27	11,'00	67	3.57
June	76.5	53.2	64.8	23.2	93	6,'99	39	5,'00	54	2.84
July	82.1	59.8	71.0	22.3	98	3,'98	42	1,'99	54	4.13
August	80.3	57.6	68.9	22.7	97	26,'00	38	9,'99	59	3.39
September	73.4	49.3	61.3	24.1	93	6,'00	29	28,'97	64	4.91
October	61.7	40.8	51.2	20.9	89	16,'97	18	31,'97	71	3.84
November	50.5	30.7	40.6	19.7	74	2,'00	2	24,'97	72	5.18
December	38.6	20.4	29.6	18.2	66	12,'99	−14	14,'98	80	2.48
Year	58.4	37.5	47.9	20.9	98	VII,'98	−20	II,'99	118	46.58

TABLE XIV.

PHENOMENA SHOWING ADVANCE OF THE SEASONS FOR 15 YEARS, 1886–1900.

Year.	Ponds Thawed.		Last Snowfall in Spring.	Last Frost in Spring.	First Cherry Blossoms.	First Ripe Blueberries.	First Frost in Autumn.	First Snowfall in Autumn.	Ponds Froze.	
	Ponkapog.	Hoosicwhisick.							Ponkapog.	Hoosicwhisick.
1886	—	Mar. 27	Apr. 3	May 3	Apr. 26	June 19	Sept. 21	Nov. 13	Nov. 28	Dec. 5
1887	Mar. 24	Apr. 10	Apr. 19	—	May 6	June 19	Sept. 17	Nov. 16	Nov. 27	Dec. 1
1888	Mar. 29	Apr. 9	May 2	May 3	May 14	July 5	Sept. 7	Oct. 9	Nov. 22	Dec. 15
1889	Mar. 12	Mar. 12	Mar. 31	Apr. 23	Apr. 28	June 20	Sept. 23	Dec. 3	Dec. 5	Dec. 16
1890	Mar. 12	Mar. 12	Apr. 5	May 12	May 2	June 27	Sept. 25	Dec. 3	Nov. 27	Dec. 2
1891	Mar. 13	Mar. 22	Apr. 25	May 19	Apr. 27	June 23	Oct. 2	Oct. 23	Dec. 1	Dec. 18
1892	Apr. 2	Apr. 3	Mar. 23	Apr. 27	May 4	June 25	Sept. 21	Nov. 5	Dec. 3	Dec. 6
1893	Apr. 1	Apr. 1	Apr. 20	Apr. 26	May 10	June 28	Sept. 3	Dec. 3	Dec. 4	Dec. 4
1894	Mar. 12	Mar. 12	Apr. 13	May 15	Apr. 28	June 12	Sept. 25	Nov. 5	Nov. 13	Nov. 30
1895	Mar. 27	Apr. 5	Apr. 16	May 17	May 4	June 22	Aug. 22	Nov. 2	Dec. 7	Dec. 7
1896	Apr. 2	Apr. 2	Apr. 22	May 13	May 2	June 20	Sept. 2	Nov. 13	Dec. 4	Dec. 4
1897	Mar. 23	Mar. 24	Apr. 28	Apr. 29	Apr. 30	June 24	Sept. 22	Nov. 12	Nov. 24	Nov. 24
1898	Mar. 14	Mar. 15	May 8	May 10	May 3	July 5	Oct. 7	Nov. 25	Nov. 26	Nov. 29
1899	Mar. 31	Apr. 7	Apr. 17	May 4	Apr. 30	June 14	Sept. 16	Nov. 11	Nov. 27	Dec. 10
1900	Mar. 20	Mar. 21	Mar. 31	May 29	May 2	June 22	Sept. 19	Nov. 9	Nov. 17	Dec. 11
Mean '86-00	Mar. 22	Mar. 27	Apr. 15	May 8	May 2	June 23	Sept. 17	Nov. 12	Nov. 28	Dec. 6

N. B. — Ponkapog is a shallow pond about two miles south of the Observatory, and Hoosicwhisick is a deeper but smaller pond about one mile southeast of the Observatory. The last and the first snowfall refer to a measurable quantity of snow (0.01 inch melted). The first and the last frost were the first and the last observed at the Valley Station, whether light or severe. The cherry blossoms were observed at the Base Station, and the blueberries on the hill near the Observatory.

APPENDIX A.

A STUDY OF THE VISIBILITY OF DISTANT OBJECTS DURING THE LUSTRUM, 1896–1900.

By Arthur E. Sweetland.

Owing to the elevated position of the Blue Hill Observatory a fine opportunity is presented for studying the transparency of the atmosphere by noting some well defined objects rising above the horizon that can be seen in every direction. The objects chosen for the study were towers and tall chimneys, of which the direction and distance from the Observatory, and the height above sea-level are as follows: —

	Azimuth in Degrees from South.	Distance in Miles from Observatory.	Height of Top, in Feet, above Sea-Level.
Fall River Chimneys	1	35.5	250
Attleboro' Standpipe	26	20.5	300
Marlboro' "	113	25.0	735
Lawrence "	174	34.5	417
Thatcher's Lights	223	40.0	163
Minot's Light	251	18.5	84
Standish Monument	302	26.0	300

The Fall River Chimneys are a collection of factory chimneys situated in the city of Fall River. The Attleboro' Standpipe is a tall black tower, situated on a hill near the town. Marlboro' Standpipe is a black tank, supported upon trestle work 75 feet above the ground. Lawrence Standpipe is a red brick tower on a hill in the city of Lawrence. Thatcher's Island Lights are two gray stone towers on Thatcher's Island, at the extreme end of Cape Ann. Minot's Light, situated on Minot's Ledge, off the coast of Cohasset, has only the lantern and a small part of the tower visible over high land. Standish Monument is a gray stone tower surmounted by a statue of Captain Myles Standish and is situated on a hill in Duxbury. These objects are all outlined against the sky, which serves as a very good background for observing them. No observations are made of Minot's Light in the daytime.

So far as possible, the objects were chosen with relation to the cardinal points of the compass. Chelmsford Lookout, a tower on Robins' Hill in Chelmsford, was used from 1896 to 1897, but owing to the poor background (a hill instead of the sky) observations of this point were discontinued on December 31, 1897, and Marlboro' and Lawrence Standpipes were substituted. Marlboro' is nearer west of Blue Hill than Chelmsford, and Lawrence is nearer north. The objects are so situated that they may be divided into two zones. The first embraces the objects distant between 20 and 30 miles and includes Attleboro', Marlboro', Minot's Light, and Standish Monument. These lie approximately east and west of Blue Hill, with the exception of Attleboro', which is southwest. The three other objects, distant between 30 and 40 miles, are Fall River, Lawrence, and Thatcher's Island. These three lie approximately north and south of Blue Hill. The observations were begun in 1896 and have been taken daily at 8 A.M. and 2 P.M., except that the observation of Minot's Light is made at 8 P.M. Thatcher's Island Lights are also observed at 8 P.M. Unfortunately there are no lighthouses on the west, north, and south, so that the visibility at night cannot be determined except towards the east.

Table XV shows the total number of times that each object was visible to the naked eye during the five years, 1896–1900, with the exception of Lawrence and Marlboro', which are for the three years, 1898–1900.

TABLE XV.

NUMBER OF DAYS VISIBLE, 1896–1900.

Month.	8 A.M.						2 P.M.						8 P.M.	
	Fall River Chimneys.	Attleboro' Standpipe.	Marlboro' Standpipe.	Lawrence Standpipe.	Thatcher's Lights.	Standish Monument.	Fall River Chimneys.	Attleboro' Standpipe.	Marlboro' Standpipe.	Lawrence Standpipe.	Thatcher's Lights.	Standish Monument.	Thatcher's Lights.	Minot's Light.
January	1	36	8	3	0	12	25	64	31	15	3	36	42	108
February	2	31	6	0	0	9	25	51	17	8	7	32	35	99
March	12	50	12	3	3	34	36	84	32	18	4	62	65	109
April	15	52	18	10	3	33	49	87	35	22	11	62	63	116
May	7	36	10	5	2	22	18	68	19	8	2	48	44	109
June	10	43	16	2	2	27	25	80	27	9	1	56	41	109
July	3	34	12	4	0	17	23	69	31	11	2	50	44	117
August	4	28	4	0	1	12	26	74	24	6	8	44	36	110
September	7	31	6	1	1	19	33	73	25	7	6	51	47	111
October	6	29	7	2	1	12	32	61	26	10	11	33	37	92
November	10	35	7	0	0	17	31	70	24	13	2	34	40	106
December	3	23	2	0	0	10	25	55	21	5	4	32	30	116
Total	80	428	108	30	13	224	348	836	312	132	61	540	524	1302

The month of greatest visibility is April. The months when the objects are least frequently seen are February and December, but as the small total in February is probably due to the short month, the month of least visibility is December. After the clear month of April the visibility decreases very suddenly in May and, with the exception of slight increases in June, September, and November, the visibility diminishes slowly from April until December. From December until April it is increasing, with the exception of February, which, if it were not for the small number of days, would probably show the same gradual increase. The explanation is that during the winter the ground is usually covered with snow, which prevents the dust from rising, and the rain and snow in falling gradually clear the atmosphere from the dust which has been carried up by the winds of summer and autumn. Thus during the winter the atmosphere is being gradually cleared, and since April occurs just at the end of winter, it is the month with most transparent atmosphere.

Table XVI shows the percentage of frequency, obtained by dividing the number of days each object was observed at the given hour by the total number of days in the five years for the respective month.

It appears that for the five years, at 8 A.M., Fall River was visible 4 per cent. of the time Attleboro' 23, Marlboro' 10, Lawrence 3, Thatcher's Lights

TABLE XVI.

PERCENTAGE OF DAYS VISIBLE, 1896–1900.

Month.	8 A.M.						2 P.M.						8 P.M.	
	Fall River Chimneys.	Attleboro' Standpipe.	Marlboro' Standpipe.	Lawrence Standpipe.	Thatcher's Lights.	Standish Monument.	Fall River Chimneys.	Attleboro' Standpipe.	Marlboro' Standpipe.	Lawrence Standpipe.	Thatcher's Lights.	Standish Monument.	Thatcher's Lights.	Minot's Light.
January	1	23	8	3	0	8	16	41	37	16	2	23	27	70
February	1	22	7	0	0	6	18	36	20	9	5	23	25	71
March	8	32	13	3	2	22	23	54	38	19	3	40	42	70
April	10	35	20	11	2	22	33	58	38	25	7	41	42	77
May	5	23	11	5	1	14	12	44	20	8	1	31	28	70
June	7	29	18	2	1	18	16	53	30	10	1	38	28	73
July	2	22	13	4	0	11	15	45	37	12	1	32	28	75
August	3	18	5	0	1	8	17	42	26	7	5	28	23	71
September	5	21	7	1	1	13	22	48	28	8	4	34	31	74
October	4	19	8	2	1	8	21	39	28	11	7	21	24	59
November	7	23	8	0	0	11	21	46	27	15	1	23	26	70
December	2	15	2	0	0	6	16	35	23	5	3	21	19	75
Mean	4.5	23.5	10.0	2.6	0.7	12.3	19.2	45.0	29.3	12.1	3.3	29.6	28.6	71.2

The percentages for Lawrence and Marlboro' are corrected to five years.

only 1, and Standish Monument 12 per cent. of the time. At 2 P.M. Fall River was visible 19, Attleboro' 45, Marlboro' 29, Lawrence 12, Thatcher's Lights 3 and Standish Monument 30 per cent. of the time. At 8 P.M. the fixed lights on Thatcher's Island were visible 29 and the flashing light on Minot's Ledge 71 per cent. of the time, — the former, though more than twice as far away, being nearly twice as powerful and placed almost twice as high as the latter. It was found that at 2 P.M. the mean percentage of visibility of all the objects is 14 per cent. greater than at 8 A.M. Within the 20–30 mile zone at least one of the objects named is always visible at 8 A.M. on some day of the month. December, 1899, was an exception. At 2 P.M. at least one of the objects is likewise visible on some day of the month. In the district bounded by 30–40 miles all the objects are frequently invisible at 8 A.M. during a month, the months when they are least likely to be seen being February, December, January, and July. At 2 P.M. there is no month when some one of the objects in this zone is not visible.

The relation to the mean departures of the barometric pressure from normal each month was then determined by the following plan. Each month for the five years the plus or minus departures from normal pressure, with the direction from Blue Hill of the region in which they occurred, were noted and then the plus or minus departures of the visibility of the objects were determined from the five-year means for that month. With the pressure above normal it was found that for all months the objects were most frequently visible when the pressure was high in the west and least frequently visible when the pressure was high in the north and northeast. As regards pressure below normal the visibility was greatest when the pressure was low in the southwest, and great when the pressure was low in the east and northeast, but was least when the low pressure was located south of the hill.

The next investigation was the relation of visibility to the high and low pressure centres shown on the daily weather map. The squares of five degrees formed by the lines of latitude and longitude between the 60th and 90th meridians and between the 30th and 50th parallels were numbered, and on every day from 1896 to 1900, at 8 A.M., when there was a centre of high or low pressure in any one of these five-degree squares the objects visible at 2 P.M. were tabulated under the respective five-degree square occupied by the highest or the lowest pressure. It was thought advisable to take 2 P.M., instead of 8 A.M., because the sun is then more nearly vertical and the illumination in every direction is nearly the same. It was decided to use the four objects which were most nearly in line with the cardinal points, these being Lawrence on the north, Standish on the south-

east, Fall River on the south, and Marlboro' on the west. The observations were separated into the four seasons, and percentages were obtained by dividing the number of observations in each five-degree square by the total number of high or low pressure areas respectively recorded in that square. From the mean percentages of visibility for these four objects, tabulated under the head of each square, it could be readily seen on which side of the highest or lowest pressure the clearest air prevailed. For the low pressure areas it was found that for all seasons the region of least visibility is in front of the centre of low pressure, in a triangular-shaped area with the base of the triangle near the centre of the low pressure and the apex some distance east of the centre. During the spring, summer, and autumn it is clear on the northeast edge of the storm area, and during the winter there is a clear region on the south-southeast edge of this area. Immediately following the passage of the centre of low pressure the atmosphere clears, and, in the rear, at a distance of about 400 miles west-southwest of the lowest pressure, the region of greatest visibility within the area of low pressure is encountered. The annual results are the same as for the seasons. For the high pressure the region of greatest visibility is about 700 miles east-northeast of the centre. In the winter it becomes hazy as soon as the high pressure centre has passed, but during the other seasons the change from clearness to haziness is more gradual. During the spring, summer, and autumn it becomes very hazy northwest of the high pressure centre, but the visibility diminishes less rapidly southwest of the centre. The yearly summary is the reverse of that for low pressure, since the region of greatest visibility is triangular-shaped, with the apex at the high pressure centre and the base about 1,000 miles east of the centre. Giving all the squares equal weight, the visibility within the area of low pressure is 20 per cent., and within the area of high pressure 24 per cent., or nearly the same under the two conditions.

The objects were then treated individually for both low and high pressures during the five years. In the case of the low pressure, Fall River is most frequently visible when west-southwest of the centre, and next when southeast of it. In the case of the high pressure the regions are reversed, the clearest region being about 700 miles east of the centre, with a slight secondary region of visibility south. Within the area of low pressure Attleboro' is best seen southwest of the centre, and within the high pressure is best seen about 800 miles east of the centre. Marlboro' is seen when southwest of the low pressure and when about 700 miles east of the high pressure. The chances of seeing Lawrence in front of a low pressure are much smaller than for almost any other object, except Thatcher's

Island Lights. Immediately after the low pressure has passed and westerly winds prevail, it is seen, and usually is clearest when about 800 miles east of the high pressure. Thatcher's Lights are seen when they are about 900 or 1,000 miles northeast of a low pressure that causes east or northeast winds. Under these conditions the cirro-stratus cloud bank comes up from the southwest, obscuring the sun at the Observatory, but, as it is still shining on Thatcher's Lights, they stand out prominently. These lighthouses are also visible when the high pressure in the north causes northeast or east winds, which blow the smoke from the many chimneys of Boston landwards and make the atmosphere over the ocean very clear. The lights may be seen when the high pressure in the west causes northwest winds, but generally northwest winds are so heavily charged with smoke from the city that the objects are invisible except on Sundays. Standish Monument to the southeast of Blue Hill is seen most frequently in the low pressure when both are northeast or southeast of the centre, the highest percentage being southeast of the centre. In the high pressure, as for most of the other objects, Standish is seen best in front of the centre.

The four objects — Fall River, Marlboro', Lawrence, and Standish Monument — were next treated with reference to the wind direction as recorded at the Observatory each day at 2 P.M. when any one was visible. The number of times that each was observed during the five years, 1896–1900, was determined for each of the eight wind directions, and then the percentage of frequency for each wind direction was obtained. The mean percentages for the four objects showed that with a northwest wind the objects were visible more than twice as often as with the next clearest wind, which was west. These two winds included the larger portion of the observations. For the remaining winds the visibility was nearly equally distributed, there being a slightly greater frequency of visibility with east and northeast winds and the least visibility with southeast winds. By getting the difference of the percentage of visibility for each object from the mean, it is found that Marlboro' is relatively more frequently seen with west and southwest winds than the other objects; Lawrence, with northwest winds; Standish Monument, with northeast and east winds; and Fall River, with easterly winds, and also with southeast and south winds. In the two cases first named the winds were blowing from the objects towards Blue Hill; in the two last cases the winds were blowing across the line of sight, and in none of the cases was the wind blowing from Blue Hill towards the objects. The data show that the object is always most clearly visible when the wind is blowing from the object towards the observer. The only object that was invisible in any one wind during the five years was Lawrence, which was never seen with

an east wind, because this wind blows the smoke from Boston in towards the land and thus hides the northern horizon.

The last investigation was to see what effect the change of temperature has on visibility. For this purpose all days when Standish or Marlboro' was visible at 2 P.M. were tabulated, and the temperature on the day of the observation and on the preceding and following days was compared with the normal temperature of those days, to ascertain if they were warmer or colder than usual. Standish Monument and Marlboro' Standpipe were chosen because they are nearly equally distant from the Observatory, and are more frequently visible than Fall River and Lawrence. The mean temperature departures on each of the three days for Standish Monument are as follows: day before —0°.1, day of observation —2°.4, and day after —0°.9. For Marlboro' Standpipe the differences are +0°.4 on the day before, —1°.9 on the day of the observation, and —0°.2 on the day following. It will be seen from these figures that the mean temperature is below normal when Standish Monument is visible, and that the departure from normal is greater on the day of the observation than on the preceding and following day. For Marlboro' the mean temperature departures during the same period are the same as for Standish, except that on the day before the observation the temperature shows a plus departure, whereas Standish shows a minus one. Hence, it is evident that the condition of temperature under which the objects are most likely to be seen is when the temperature is below normal.

APPENDIX B.

A DISCUSSION OF THE TEMPERATURE DURING FIFTY YEARS AT MILTON, MASS.

By Arthur E. Sweetland.

Commencing January 1, 1849, and continuing until December 31, 1888, Mr. Charles Breck, of Milton Centre, observed a thermometer at sunrise and at 1 P.M. each day, without omitting a single observation. Throughout the greater part of the period he also made an observation of the thermometer near sunset. These observations were all taken with the same thermometer, having a Fahrenheit scale, which, in June, 1890, was compared with a standard thermometer loaned by Professor E. C. Pickering, and the differences were found not to exceed one degree. The thermometer was hung outside a north window of Mr. Breck's house about six feet above the ground, and remained in the same place throughout the entire period. The latitude of the station is 42°16′ N. and the longitude 71°6′ W., the height of the ground above sea-level being about sixty feet. The records cover a period of 40 years, and with the Blue Hill observations constitute a series of 52 years. For the purpose of comparison with other New England stations and also to agree with the form recommended by the International Meteorological Congress, the mean monthly temperatures in Table XXII are arranged in five-year groups, beginning with 1851 and continued through 1900.

From a comparison of the observations made simultaneously at Milton Centre and at Blue Hill Observatory ($3\frac{1}{2}$ miles southwest and 580 feet higher) during the four years, 1885 to 1888, Mr. Breck's means (obtained from the morning and noon observations) were reduced to the Blue Hill means (mean of maximum and minimum). The corrections in Fahrenheit degrees which it was necessary to subtract from Mr. Breck's observations are given in Table XVII. Applying the last correction in the lower line to Mr. Breck's mean of the years 1851 to 1884, the mean temperature of the fifty years, 1851 to 1900, on Blue Hill, is found to be 45°.4. Separating the years into ten-year periods the mean temperature is found to rise steadily from 44°.1 for the first ten years, to 47°.4 for the last ten

TABLE XVII.

EXCESSES OF TEMPERATURE AT MILTON CENTRE OVER THAT AT BLUE HILL.

Date.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1885	. .	4.8	5.9	3.5	2.3	5.2	2.9	2.8	3.7	4.9	3.8	4.9	4.2
1886	4.9	3.6	4.8	4.7	4.5	4.2	2.0	2.2	2.1	3.2	4.0	4.5	3.7
1887	5.0	4.4	5.0	3.5	3.1	3.9	4.7	4.5	3.8	3.8	3.9	5.6	4.3
1888	4.4	4.3	5.1	4.2	5.0	4.4	3.1	2.7	4.1	5.6	4.3	5.0	4.4
Mean.	4.8	4.3	5.2	4.0	3.7	4.4	3.2	3.0	3.4	4.4	4.0	5.0	4.1
Mean Smoothed.	4.8	4.8	4.8	4.3	4.0	3.7	3.5	3.0	3.5	4.0	4.3	4.7	4.1

years, a rise of 3°.3, or about one-tenth degree for each year. The greatest rise has occurred in the past ten years, this rise of 1°.7 being greater than the sum of all the previous ten-year differences. The warmest year was 1900 with a mean temperature of 48°.6, and the coldest 1868 with a mean temperature of 42.°3. The mean annual temperatures when plotted show that in only one year during the first twenty-five was the mean annual temperature above the average for the fifty years, while during the remaining twenty-five years there were only four years when it was below this average. In 1877 the temperature rose much above the fifty-year average, and since then has continued above with the four exceptions mentioned. In looking for cases where the cold years or the warm years tend to occur in groups, it is seen that the cold years are more apt to occur in a series than are the warm years, the warm year more frequently appearing in the curve as an isolated rise above the mean.

The rise in temperature during the fifty years seems unusual, and, in seeking for an explanation, the mean annual temperatures at a number of stations in New England that had records extending over thirty years or more were obtained, and the observations were smoothed by getting the means of each successive three years. The stations near the sea-coast were New Haven, Ct., New Bedford, Milton, and Cambridge, Mass., and Belfast, Me. They all show a fall of temperature except Cambridge and Milton. The inland stations, Middletown, Ct., Amherst, Mass., and Lunenburgh, Vt., show a rise. The rise in temperature at Cambridge and Milton is perhaps due to the growth of Boston, because the large amount of heat liberated from the chimneys of Boston may affect the thermometers in the suburbs. The rise of temperature in the interior towns cannot be explained in the same way, as Amherst, which had the least increase in population for the

years 1880–1890 of any of the inland towns investigated, shows the greatest increase of temperature. Along the Connecticut River the temperature is slowly rising, and in general along the sea-coast the temperature is slowly falling. A comparison between the records at Milton and the records at Boston during the first thirty years of the United States Weather Service shows that while the mean temperature at both stations has been steadily rising, the rise at Milton has been slightly greater. In seeking for the cause of this divergence some interesting facts were brought out. As was stated, the records at Mr. Breck's house were taken with the same thermometer exposed in the same position throughout the forty years. The position of the Boston station was changed three times, and the method of calculating the mean temperature was altered. Table XVIII shows the mean temperatures and the differences in temperature between Milton and Boston for each year from 1871 until 1900 inclusive, the last twelve years at Milton being deduced from the Blue Hill records. It appears that between the years 1875–1876, 1883–1884, and 1888–1889 abrupt changes in the differences of temperature between the two stations occurred. Upon investigation, it was found in the first two cases that the thermometer in Boston had been moved to different buildings, and in the third case the change was coincident with an alteration in the method of calculating the mean temperature from the mean of three observations daily to the method of calculating it from the mean of the daily maximum and minimum temperatures.

TABLE XVIII.

MEAN TEMPERATURES AT MILTON AND BOSTON, AND THEIR DIFFERENCES.

Year.	Milton.	Boston.	M.—B.	Year.	Milton.	Boston.	M.—B.	Year.	Milton.	Boston.	M.—B.
1871	49.1	48.9	+0.2	1881	49.9	48.5	+1.4	1891	52.1	50.4	+1.7
1872	48.3	48.5	−0.2	1882	49.3	48.1	+1.2	1892	50.8	49.4	+1.4
1873	48.1	48.3	−0.2	1883	48.3	47.6	+0.7	1893	49.7	47.9	+1.8
1874	48.8	48.7	+0.1	1884	50.4	48.3	+2.1	1894	52.1	50.3	+1.8
1875	47.0	46.2	+0.8	1885	49.3	47.2	+2.1	1895	51.4	49.8	+1.6
1876	49.6	47.3	+2.3	1886	49.9	48.1	+1.8	1896	50.9	49.2	+1.7
1877	51.2	49.2	+2.0	1887	50.3	48.2	+2.1	1897	51.3	49.9	+1.4
1878	51.1	49.2	+1.9	1888	48.8	46.8	+2.0	1898	52.3	50.8	+1.5
1879	49.7	47.8	+1.9	1889	51.8	50.7	+1.1	1899	51.6	50.2	+1.4
1880	51.2	49.4	+1.8	1890	50.4	49.1	+1.3	1900	52.7	50.8	+1.9

As Mr. Breck took his observations at sunrise and at 1 P.M., which are usually the coldest and the warmest times of day respectively, it was possible to construct

a table giving the maximum and the minimum temperature of each month. During the winter, on days with a southerly wind, or during the summer with an east wind, when the temperature was higher in the morning than at night, the morning observation was taken as the maximum, and the 1 P.M. or the evening observation was taken as the minimum. The maximum and minimum temperatures between 1885 and 1888 thus derived were found to agree so closely with those at Blue Hill that no corrections were applied to Mr. Breck's previous observations, as the error of a correction would probably exceed the difference in an individual case. Table XXIV shows that there are very few years when the maximum temperature does not reach 90° or above, for during 1849–1900 there were only six years when it was below 90°. These years were 1860, 1862, 1869, 1877, 1889, and 1897, and the mean temperature of each year, with the exception of 1877, 1889, and 1897, was below the normal of the fifty years. The years with the highest maxima were 1894 and 1898, when the temperature rose to 97°. The number of times in any month that the temperature rose to 90° or more during the period is as follows: —

May.	June.	July.	August.	September.
9	29	31	16	4

It is seen that during five months of the year the temperature rises to 90°, and although August is a warmer month than June, extremely high temperatures are not so frequent. The minimum temperature of the year usually falls to zero or below. The years that the minimum temperature was above zero, 1853, 1870, and 1877, were warmer than the average of the fifty years. The number of times in any month when it fell to zero or lower during the fifty years follows: —

December.	January.	February.	March.
25	33	36	10

As shown in Table XXII, the coldest month on Blue Hill is January, with a mean temperature of 23°.0, and the warmest is July, with a mean temperature of 68°.4. The mean temperature of December is only 3°.6 lower than that of March, but December has more cases of zero temperature than March in the ratio of two and one-half to one. The temperature falls to freezing or below in all the months of the year except June, July, and August. The number of times when the temperature rose to 60° or above during the winter months and in March is greatest in March and least in January, as seen below: —

December.	January.	February.	March.
10	2	8	23

The highest temperature during the fifty-two years was 97°, on July 20, 1894, and the lowest —18°, on January 24, 1857, giving an extreme range of 115°.

In Table XXIII the years are separated into seasons, and on plotting the observations, it is seen that there is the same general rise in temperature for each season throughout the fifty years that was observed in the mean annual temperature, although the rise is more marked for the winter than for the summer months. The mean temperatures of the winter vary more than do those of the other seasons. The cold winters have no tendency to occur together, nor have the warm winters, except during 1854–57, when the winters were somewhat colder than usual, and during 1861–64 and 1869–71, when there was a series of warm winters. A very marked two-year period that prevailed through the winter months of 1873–85 and covered most of the United States, was described by Mr. Clayton in the American Meteorological Journal for August, 1884, and April, 1885. The coldest winter was in 1868 and the warmest in 1890. Warm spring months are apt to occur together, and likewise cold ones, but the frequency of the oscillations from warm to cold is not so great as for the winter months, a period of several years being necessary to change from the maximum to the minimum of each period. Cold springs occurred in 1854–58, 1867–70, 1872–75, 1882–85, and 1890–93. A short warm period extended from 1851–54, and a longer one from 1876–81. The coldest and warmest springs were in 1857 and 1894, respectively. The temperature for the summer months has the secular rise mentioned at the beginning of the discussion, but it is smaller than for any of the other seasons. During the fifty years there were three series of cool summers, the first between 1857–63, the second between 1866–69, and the last between 1888–91. The warm summers do not appear in groups except for the short periods, 1894–96, and 1898–1900, but were mostly of one or two years' duration, when the temperature rose considerably above the average for that season. The coldest summers were in 1862 and 1869, and the warmest was in 1899. The autumn months were similar to the spring ones in showing the grouping effect. The cold periods were in 1856–59 and 1887–90, and the warm periods in 1853–55 and 1894–1900. The coldest autumn was in 1868 and the warmest in 1900.

The next step was to try grouping the seasons in various combinations to find if one season was followed by a season of the same character or of an opposite character. Table XIX shows how many times during the fifty years, with various combinations of seasons, the different seasons were warm or cold. To obtain this the fifty years were divided into periods of ten years each, and the departures of the individual years from the mean temperatures of each ten years were

found. The reason that the years were divided into ten-year groups instead of taking the mean of the entire fifty years was on account of the gradual rise in temperature throughout the fifty years causing all the earlier years to be below the fifty-year average and all the later years to be above. Having the departures, in order to see if a warm or a cold winter foretold a warm or a cold spring or summer, or if a warm or a cold spring foretold a warm or a cold summer or autumn, or if any of the various combinations of the seasons that can be made could be used for forecasting the coming seasons, the seasons were so grouped, but in none of the cases was it possible to find any connection with the temperature changes that followed. Taking the times when both seasons had the same sign, whether + or —, it is seen in the table that the sum of the like signs is very nearly the same as the sum of the unlike signs, thus showing that the sequence is probably nothing more than chance.

TABLE XIX.

SEQUENCE OF WARM AND COLD SEASONS.

Seasons.	Both seasons were warm.	Both seasons were cold.	Like signs.	Unlike signs.
Winter......... Spring	12	14	26	24
Spring .... Summer........	10	14	24	26
Summer........ Autumn........	9	12	21	29
Autumn........ Winter.........	10	12	22	28
Winter......... Summer........	9	13	22	28
Spring .... Autumn........	12	14	26	24

Another similar investigation was to ascertain if a warm or a cold season was followed by the same or by the opposite temperature departure during the next corresponding season. In Table XX are shown the cases where the departure from the normal in one year is followed by the same or an opposite departure in the

next year. The + sign indicates a warm season, and the — sign a cold one. The figures show the number of times that the signs were the same or opposed.

TABLE XX.

SEASONAL SEQUENCE IN SUCCESSIVE YEARS.

WINTER.

+	followed	by	+	7	times.
+	"	"	−	14	"
−	"	"	−	9	"
−	"	"	+	15	"

SPRING.

+	followed	by	+	11	times.
+	"	"	−	9	"
−	"	"	−	16	"
−	"	"	+	8	"

SUMMER.

+	followed	by	+	6	times.
+	"	"	−	11	"
−	"	"	−	16	"
−	"	"	+	12	"

AUTUMN.

+	followed	by	+	13	times.
+	"	"	−	9	"
−	"	"	−	11	"
−	"	"	+	11	"

Grouping the like and the unlike signs of the four seasons it is seen below that the sum of the like signs is least for winter and summer, and greatest in spring and autumn, and vice versa for the unlike signs.

	Winter.	Spring.	Summer.	Autumn.
Like signs	16	27	22	24
Unlike signs ...	29	17	23	20

Converting the numbers into percentages gives the following distribution, in which the maximum percentages are italicised.

	Winter.	Spring.	Summer.	Autumn.	Year.
Like signs	35	*61*	49	*55*	50
Unlike signs ...	*65*	39	*51*	45	50

As is seen, the percentages vary for the different seasons, but for the year the percentage for both signs is 50 per cent. or chance.

Table XXI gives the temperature during the times of sunspot maxima and minima. Here the groups of years in the middle of which occurred a maximum or a minimum of sunspots, as observed by Wolf and Wolfer, are placed at the left of the table under the headings "Sunspot Maximum" and "Sunspot Minimum." The mean annual temperature for the year corresponding to the maximum is placed under the word "Maximum," and the mean annual temperatures for the three years preceding and succeeding that year are extended on the left and right hand sides respectively, making seven years of temperature observations

TABLE XXI.

ANNUAL TEMPERATURES AND SUNSPOT MAXIMA AND MINIMA.

Years of Sunspot Max.				Sunspot Maximum.			
1857–63	43.8	43.4	43.7	44.4	44.6	44.5	44.5
1867–73	43.7	42.3	44.1	46.2	45.0	44.2	44.0
1880–86	47.1	45.8	45.2	44.2	46.3	45.1	46.2
1890–96	46.3	47.9	46.7	45.6	48.0	47.2	46.8
Mean	45.2	44.9	44.9	45.1	46.0	45.3	45.3
Years of Sunspot Min.				Sunspot Minimum.			
1853–59	45.2	44.5	44.4	43.1	43.8	43.4	43.7
1864–70	44.9	44.9	44.5	43.7	42.3	44.1	46.2
1875–81	42.9	45.5	47.1	47.0	45.6	47.1	45.8
1886–92	46.2	46.1	44.4	47.7	46.3	47.9	46.7
Mean	44.7	45.5	45.2	45.4	44.5	45.7	45.6
Difference	+0.5	−0.6	−0.3	−0.3	+1.5	−0.4	−0.3

near the time of sunspot maximum. This method is followed for each one of the four sunspot maximum periods which are included in this series of observations, and the years of sunspot minima are treated in the same manner. From the mean temperatures as arranged under this grouping are obtained the differences between the maximum and minimum sunspot periods. As is seen from the table, the mean difference between the periods of sunspot maximum and minimum is zero, but the individual years vary slightly above or below zero. The only marked feature, which might perhaps be connected with the sunspots, is the high average temperature of the year following the sunspot maximum and the low average temperature of the year following the sunspot minimum, the difference between these extremes being 1°.5.

TABLE XXII.

MEAN TEMPERATURES CORRECTED TO AND AT BLUE HILL OBSERVATORY, 1851–1900.

Date.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1851	23.7	26.1	33.2	41.7	52.5	65.4	66.2	64.5	57.7	49.6	32.3	19.7	44.4
1852	17.8	21.5	29.1	37.0	55.3	62.0	69.6	63.0	61.1	47.0	35.0	32.4	44.2
1853	23.6	25.5	31.7	41.3	52.5	62.7	66.4	67.4	59.9	47.7	39.0	24.4	45.2
1854	21.5	20.7	26.8	39.4	57.5	62.3	70.5	65.0	59.0	49.7	39.2	22.3	44.5
1855	25.8	17.8	28.8	40.2	50.9	62.3	69.3	63.4	58.8	49.4	38.2	28.2	44.4
Mean	22.5	22.3	29.9	39.9	53.7	62.9	68.4	64.7	59.3	48.7	36.7	25.4	44.5
1856	15.0	21.5	23.7	42.6	50.5	64.3	70.9	65.7	59.9	47.6	34.8	21.0	43.1
1857	12.7	30.2	28.8	36.1	51.0	60.2	67.6	65.3	59.5	46.3	38.2	29.6	43.8
1858	27.1	18.7	27.4	40.2	49.5	63.9	65.9	63.5	57.6	49.6	32.0	24.8	43.4
1859	22.0	25.6	34.5	39.0	54.9	60.6	66.1	64.9	55.9	43.1	36.8	20.8	43.7
1860	23.7	22.7	33.4	39.4	51.4	61.5	66.3	66.9	56.4	47.7	39.7	23.8	44.4
Mean	20.1	23.7	29.6	39.8	51.4	62.1	67.3	65.3	57.8	46.8	36.3	24.0	43.7
1861	19.1	29.1	30.7	40.3	50.1	61.7	67.7	63.9	57.3	50.8	36.1	28.4	44.6
1862	21.3	20.6	29.9	40.2	54.3	60.1	65.2	65.9	59.4	51.2	39.0	26.7	44.5
1863	27.3	24.3	25.1	40.2	53.5	58.5	66.8	69.0	56.0	49.1	40.3	23.5	44.5
1864	23.5	26.7	31.9	39.2	53.8	63.0	68.2	69.0	56.1	44.2	37.4	25.7	44.9
1865	14.7	24.0	35.6	45.6	46.1	64.8	67.2	66.7	63.7	45.2	38.1	27.9	44.9
Mean	21.2	24.9	30.6	41.1	51.6	61.6	67.0	66.9	58.5	48.1	38.2	26.4	44.7
1866	19.3	25.0	29.1	44.2	50.9	61.7	70.7	62.0	59.2	47.4	39.5	25.4	44.5
1867	16.0	29.8	26.8	42.3	50.2	62.7	65.4	67.0	60.9	47.4	36.0	20.0	43.7
1868	19.7	16.9	30.4	39.2	48.5	58.4	69.4	67.1	57.1	43.5	34.2	23.0	42.3
1869	26.5	26.7	26.0	42.2	51.4	60.7	66.4	64.1	59.8	46.0	32.8	26.6	44.1
1870	29.8	20.8	26.4	42.8	52.3	64.8	68.8	69.7	60.3	50.9	39.3	28.0	46.2
Mean	22.3	23.8	27.7	42.1	50.6	61.7	68.1	66.0	59.4	47.0	36.4	24.6	44.2
1871	21.7	24.0	38.2	43.8	53.7	61.9	66.9	68.3	55.3	50.7	32.7	23.5	45.0
1872	23.4	22.5	21.7	42.2	55.4	64.3	70.4	69.0	59.0	48.3	35.4	19.2	44.2
1873	20.7	21.7	29.4	40.7	53.1	63.3	69.1	65.1	58.4	49.2	29.5	28.2	44.0
1874	27.1	22.7	31.8	35.9	53.0	63.1	68.5	63.0	59.6	48.5	36.8	26.5	44.7
1875	16.7	18.8	26.5	38.4	54.3	63.5	66.8	67.7	57.4	47.3	30.7	26.3	42.9
Mean	21.9	21.9	29.5	40.2	53.9	63.2	68.3	66.6	57.9	48.8	33.0	24.7	44.2
1876	28.2	25.5	30.9	41.4	53.4	66.8	71.8	67.9	57.7	44.0	38.1	19.8	45.5
1877	20.2	29.4	32.9	42.8	54.0	64.8	68.2	68.6	61.4	48.5	41.4	33.2	47.1
1878	24.3	27.0	37.1	46.9	53.9	62.5	69.4	66.1	61.7	52.6	36.0	26.7	47.0
1879	19.9	20.4	30.7	40.8	58.5	63.3	67.6	65.8	58.2	54.4	36.9	31.0	45.6
1880	31.3	28.2	31.5	43.8	61.1	66.2	69.3	67.4	61.0	48.5	33.6	23.1	47.1
Mean	24.8	26.1	32.6	43.1	56.2	64.7	69.3	67.1	60.0	49.6	37.2	26.7	46.4

Date.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1881	17.5	23.3	33.1	40.2	54.9	58.8	66.4	68.1	64.0	50.8	38.7	34.1	45.8
1882	24.3	26.2	32.4	39.5	47.5	64.1	68.7	67.1	61.1	52.0	35.1	24.5	45.2
1883	19.3	24.3	26.0	40.0	53.8	66.8	68.4	64.3	57.4	44.6	40.3	25.5	44.2
1884	20.5	29.7	30.7	40.9	53.8	64.8	66.4	67.3	63.5	50.0	38.0	29.4	46.3
1885	24.3	17.3	23.9	45.2	52.6	63.9	70.5	65.9	57.8	49.6	41.0	29.4	45.1
Mean	22.4	24.2	29.2	43.2	50.5	63.7	68.1	66.5	60.8	49.4	36.6	28.6	45.3
1886	23.0	23.8	30.7	46.8	54.8	61.7	69.7	66.3	61.4	50.0	40.6	25.5	46.2
1887	21.7	26.2	28.2	42.5	59.1	64.0	72.3	64.8	57.0	48.9	38.9	29.1	46.1
1888	16.9	25.4	28.6	40.4	51.5	64.6	66.3	67.5	56.7	43.8	40.5	30.8	44.4
1889	31.7	22.3	34.7	45.8	58.4	65.7	67.1	64.8	60.4	45.7	41.4	34.8	47.7
1890	30.3	30.3	31.2	44.1	54.3	61.8	68.3	66.4	60.1	47.5	38.2	23.4	46.3
Mean	24.7	25.6	30.7	43.9	55.6	63.6	68.7	66.0	59.1	47.2	39.9	28.7	46.1
1891	28.3	29.9	31.7	46.1	54.2	62.8	65.9	68.0	64.3	48.8	38.5	37.7	47.9
1892	26.0	25.7	30.1	45.7	53.5	66.9	70.3	67.6	60.4	49.5	38.1	26.4	46.7
1893	17.7	23.9	31.2	42.2	54.3	63.4	68.5	67.9	57.2	52.5	39.1	28.7	45.6
1894	27.6	23.2	39.6	44.6	56.3	66.4	72.4	65.9	63.9	51.7	35.1	29.7	48.0
1895	25.5	21.1	31.4	44.0	58.3	66.0	66.7	69.0	64.0	46.6	41.4	32.8	47.2
Mean	25.0	24.8	32.8	44.5	55.3	65.1	68.8	67.7	62.0	49.8	38.4	31.1	47.1
1896	21.7	26.2	28.9	46.5	58.3	63.2	69.5	68.8	59.8	47.4	44.5	26.8	46.8
1897	25.3	27.6	34.2	46.4	55.6	60.0	69.2	66.8	60.5	52.0	39.0	30.5	47.3
1898	25.5	29.8	40.7	40.9	54.0	63.9	69.7	70.2	64.4	51.7	39.6	28.3	48.2
1899	26.2	22.6	31.5	45.9	56.0	67.8	70.2	67.4	60.2	51.7	37.8	32.7	47.5
1900	27.8	26.5	31.2	45.6	53.5	66.1	71.3	70.1	64.2	54.8	42.2	30.1	48.6
Mean	25.3	26.5	33.3	45.1	55.5	64.2	70.0	68.7	61.8	51.5	40.6	29.7	47.7
1851–1900	23.0	24.4	30.6	42.3	53.4	63.3	68.4	66.5	59.7	48.7	37.3	27.0	45.4

N. B.—The mean temperatures from 1851 to January, 1885, inclusive, were those at Milton Centre, corrected to Blue Hill Observatory by subtracting the smoothed differences between these places which are given in Table XVII. Subsequently, the mean temperatures were derived from the maxima and minima at Blue Hill Observatory.

TABLE XXIII.

MEAN SEASONAL TEMPERATURES CORRECTED TO AND AT BLUE HILL OBSERVATORY, 1851–1900.

Date.	Winter.	Spring.	Summer.	Autumn.	Date.	Winter.	Spring.	Summer.	Autumn.
1851	24.3	42.5	65.4	46.6	1876	26.7	41.9	68.9	46.7
1852	19.6	40.4	64.9	47.8	1877	23.0	43.2	67.2	50.4
1853	27.1	41.8	65.5	49.0	1878	28.1	45.9	65.0	50.1
1854	22.2	41.2	65.9	49.3	1879	22.3	43.3	65.5	49.8
1855	21.9	39.9	65.0	48.8	1880	30.1	45.4	67.6	47.7
Mean	23.0	41.2	65.3	48.5	Mean	26.0	43.9	66.8	48.9
1856	21.5	38.9	67.0	47.5	1881	21.3	42.7	64.4	51.2
1857	21.3	38.6	64.4	48.0	1882	28.2	39.8	66.6	49.4
1858	25.1	39.0	64.4	46.5	1883	22.7	39.9	66.5	47.5
1859	24.1	42.7	63.9	45.3	1884	25.2	41.8	66.1	50.5
1860	22.4	41.4	64.9	47.9	1885	23.7	40.6	66.8	49.5
Mean	22.9	40.1	64.9	47.0	Mean	24.2	41.0	66.1	49.6
1861	24.0	40.3	64.4	48.1	1886	25.4	44.1	65.9	50.7
1862	23.4	41.4	63.7	50.6	1887	24.3	43.3	67.0	48.3
1863	26.1	39.6	64.8	48.5	1888	23.8	40.2	66.1	47.0
1864	24.5	41.6	66.7	45.9	1889	28.3	46.3	65.9	49.2
1865	21.4	42.4	66.3	49.0	1890	31.8	43.2	65.5	48.6
Mean	23.9	41.1	65.2	48.4	Mean	26.7	43.4	66.1	48.7
1866	24.0	41.4	64.8	48.7	1891	27.2	44.0	65.6	50.6
1867	23.7	39.8	65.1	48.2	1892	29.8	43.1	68.3	49.4
1868	18.8	39.3	65.0	45.0	1893	22.6	42.5	66.6	49.6
1869	25.4	39.9	63.7	46.1	1894	26.5	46.8	68.2	50.3
1870	25.7	40.5	67.8	50.2	1895	25.4	44.5	67.2	50.7
Mean	23.5	40.2	65.3	47.6	Mean	26.3	44.2	67.2	50.1
1871	24.5	45.2	65.7	46.3	1896	26.9	44.5	67.2	50.6
1872	23.1	39.7	67.9	47.6	1897	26.5	45.4	65.2	50.5
1873	20.5	41.0	65.8	45.7	1898	28.6	45.2	67.9	51.9
1874	26.0	40.2	64.9	48.3	1899	25.7	44.5	69.2	49.9
1875	20.6	39.7	66.0	45.2	1900	29.0	44.6	67.6	53.7
Mean	22.9	41.2	66.1	46.6	Mean	27.3	44.8	67.4	51.3
					1851–1900	24.7	42.1	66.0	48.7

N. B. — Winter includes December of the preceding year, and the months of January and February of the current year; spring, March, April, and May; summer, June, July, and August; autumn, September, October, and November.

TABLE XXIV.

MAXIMUM AND MINIMUM TEMPERATURES AT MILTON CENTRE AND AT BLUE HILL OBSERVATORY, 1849–1900.

Date.	January.		February.		March.		April.		May.		June.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1849	58	−8	40	−8	58	8	66	18	82	32	96	40
1850	46	6	62	1	56	8	76	22	76	34	94	44
1851	52	−4	54	−2	76	12	68	24	82	34	92	40
1852	42	−6	54	0	58	6	62	25	90	36	94	42
1853	50	4	62	4	60	9	76	26	84	33	94	38
1854	54	−6	50	−4	68	12	74	20	80	30	85	40
1855	56	8	44	−14	60	10	74	16	86	38	90	44
1856	38	−8	50	0	50	−4	72	20	90	34	93	40
1857	42	−18	67	−2	58	2	64	14	82	32	82	46
1858	56	2	52	1	64	−2	68	24	72	34	88	46
1859	54	−14	48	6	58	8	64	24	88	34	92	40
1860	52	0	56	−8	70	20	70	16	84	36	88	46
1861	44	−10	58	−18	72	2	74	16	78	28	86	46
1862	46	4	46	6	47	12	78	20	84	34	84	44
1863	56	6	52	−10	54	−1	74	22	92	36	88	44
1864	52	2	50	−4	56	12	64	30	88	40	94	42
1865	44	0	54	2	64	16	80	26	88	42	90	46
1866	46	−16	64	0	68	10	83	26	84	34	92	42
1867	42	−6	60	4	54	12	70	22	72	32	88	42
1868	42	4	50	−14	60	0	70	20	78	34	87	46
1869	54	6	52	11	56	2	70	24	88	36	80	46
1870	54	12	50	1	54	8	80	30	87	38	90	51
1871	55	−6	56	−7	66	24	84	28	90	36	84	50
1872	50	4	50	2	48	−3	83	30	82	40	92	44
1873	54	−6	46	−4	58	2	64	32	87	32	89	44
1874	57	3	56	0	64	8	70	17	84	35	94	50
1875	40	−2	58	−4	54	6	68	22	85	36	92	44
1876	66	7	57	−4	66	8	78	26	86	36	86	44
1877	48	2	50	14	64	10	76	28	86	33	87	52
1878	52	−6	54	0	68	14	76	36	85	40	90	42
1879	56	0	52	6	56	14	74	22	90	40	92	46
1880	58	0	66	−4	64	16	72	24	94	36	93	48
1881	48	−4	56	−6	50	26	78	20	90	34	84	44
1882	52	−12	52	0	60	16	72	20	82	30	92	42
1883	48	0	56	4	56	0	70	22	88	32	91	50
1884	48	−4	60	4	62	2	72	28	88	38	92	40
1885	59	−6	49	−3	55	−1	79	24	82	32	89	43
1886	51	−15	55	−10	59	−3	79	24	82	35	81	47
1887	52	−11	50	0	50	6	79	19	87	42	90	45

TABLE XXIV.

MAXIMUM AND MINIMUM TEMPERATURES AT MILTON CENTRE AND AT BLUE HILL OBSERVATORY, 1849–1900.

July.		August.		September.		October.		November.		December.		Year.	
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
94	44	88	52	82	41	85	31	64	28	50	6	96	−8
87	50	85	48	84	38	72	32	62	18	50	0	94	0
88	48	86	49	86	32	75	31	60	17	50	−4	92	−4
94	50	86	50	84	36	70	28	62	20	58	8	94	−6
86	52	88	50	84	34	74	26	64	18	52	4	94	4
92	56	84	44	88	36	76	30	68	16	46	0	92	−6
92	54	84	42	86	36	75	32	68	18	54	6	92	−14
94	52	84	48	82	44	76	28	68	20	48	−6	94	−8
88	54	90	50	86	84	74	26	70	12	56	0	90	−18
91	52	82	46	86	36	78	31	62	10	56	8	91	−2
86	48	86	44	80	34	76	26	72	24	62	−4	92	−14
86	48	86	50	82	34	74	28	66	16	46	0	88	−8
92	54	88	50	80	40	76	29	62	26	58	7	92	−18
88	50	86	48	82	44	82	28	70	22	60	0	88	0
86	52	92	48	82	34	72	24	62	20	52	6	92	−10
90	50	95	54	80	36	70	30	66	18	50	−8	95	−8
86	50	90	46	88	40	72	24	70	18	60	0	90	0
94	54	80	48	84	40	74	30	68	18	56	−4	94	−16
90	56	84	46	76	36	74	30	66	12	48	−2	90	−6
94	54	85	46	84	38	72	24	64	23	46	5	94	−14
88	52	84	50	86	40	74	22	64	20	46	0	88	0
91	56	90	52	85	40	74	29	68	28	52	3	91	1
86	54	86	50	80	35	74	29	62	8	54	0	90	−7
92	55	88	54	88	46	74	31	60	16	46	−4	92	−4
90	56	87	54	84	40	70	28	56	16	58	8	90	−6
90	56	85	46	84	42	70	32	64	18	58	0	94	0
84	50	86	48	84	36	74	30	62	0	58	−6	92	−6
92	52	92	52	86	46	69	24	74	22	50	2	92	−4
88	58	86	58	84	42	76	28	68	26	66	18	88	2
92	54	84	50	88	38	78	32	60	22	50	12	92	−6
93	50	94	50	84	34	82	24	70	10	64	4	94	0
94	54	90	40	88	40	76	24	68	12	48	−6	94	−6
88	52	90	56	92	48	84	28	70	14	68	10	92	−6
92	54	90	50	82	46	74	38	70	16	50	4	92	−12
92	56	90	42	80	38	78	24	68	18	56	−14	92	−14
86	56	89	50	90	40	80	32	68	20	60	−12	92	−12
91	48	86	43	80	33	71	29	65	19	59	7	91	−6
91	50	88	51	82	38	77	25	63	22	51	3	91	−15
91	57	83	47	77	36	72	23	66	7	56	1	91	−11

Date.	January.		February.		March.		April.		May.		June.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1888	55	−11	52	− 7	54	8	77	17	82	31	93	47
1889	56	4	45	− 6	61	16	76	29	89	37	83	45
1890	62	5	61	1	64	− 1	70	21	77	36	83	48
1891	52	11	57	0	51	− 1	77	23	85	29	93	41
1892	57	− 2	43	0	53	10	76	24	79	35	91	47
1893	53	− 5	48	− 3	54	8	67	24	84	36	89	45
1894	54	− 1	47	−11	66	15	76	16	87	37	93	42
1895	50	1	44	−10	52	11	79	23	90	33	91	46
1896	41	−14	51	−16	60	7	87	21	93	37	87	45
1897	57	− 1	48	9	55	1	78	18	81	35	83	42
1898	51	− 5	53	− 1	63	22	71	18	81	37	88	46
1899	53	− 7	49	−10	59	11	80	24	87	37	91	49
1900	56	4	56	− 8	55	3	77	22	93	28	90	43
Extreme	66	−18	67	−18	76	− 4	87	14	94	28	96	38
Year	1876	1857	1857	1861	1851	1856	1896	1857	1880	1900	1849	1853

N. B. — The extreme temperatures from 1849 to January, 1885, inclusive, were those observed at fixed hours at Milton Centre; subsequently, the temperatures were obtained from maximum and minimum thermometers at Blue Hill Observatory.

July.		August.		September.		October.		November.		December.		Year.	
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
86	50	88	48	76	34	65	27	69	9	57	2	93	−11
83	51	80	50	79	38	71	28	63	16	62	8	89	− 6
92	46	87	46	80	35	73	32	63	11	53	− 1	92	− 1
86	52	91	49	86	45	81	23	62	6	59	7	93	− 1
92	47	90	51	77	43	75	30	64	16	46	− 3	92	− 3
90	49	89	48	77	39	76	25	65	16	55	− 6	90	− 6
97	52	87	42	86	38	75	33	63	9	54	3	97	−11
90	50	87	46	93	37	70	29	71	15	60	5	93	−10
89	54	93	48	88	36	74	29	69	18	55	0	93	−16
89	52	83	49	89	33	86	28	64	7	59	5	89	− 1
97	51	90	51	89	39	83	30	61	17	52	− 5	97	− 5
91	52	87	49	81	39	73	28	64	20	62	1	91	−10
95	50	96	48	92	41	80	27	72	18	55	4	96	− 8
97 1894	44 1849	96 1900	40 1880	93 1895	32 1851	86 1897	22 1869	74 1876	0 1875	68 1881	−14 1883	97 1894	−18 1857

Addendum.—In March, 1902, the thermometer used by Mr. Breck came into possession of the Blue Hill Observatory, and a comparison with the standard thermometer gave these results:—

Standard Hicks	5°.0	18°.0	32°.0	48°.0	72°.0	92°.0
Breck's Huddleston ..	5°.7	18°.8	32°.8	49°.1	73°.2	93°.1

The extreme temperatures at Milton Centre were not corrected, because of a probable increase in the error of the thermometer during the period of observation. This thermometer was enclosed in a perforated wooden case, which necessarily rendered its action sluggish. Therefore it may be assumed that in Table XXIV the minimum temperatures are about one degree above the true minimum temperatures at Milton Centre for most of the years prior to 1885, and that the maximum temperatures in this portion of the Table are somewhat below the true maximum temperatures in that locality.

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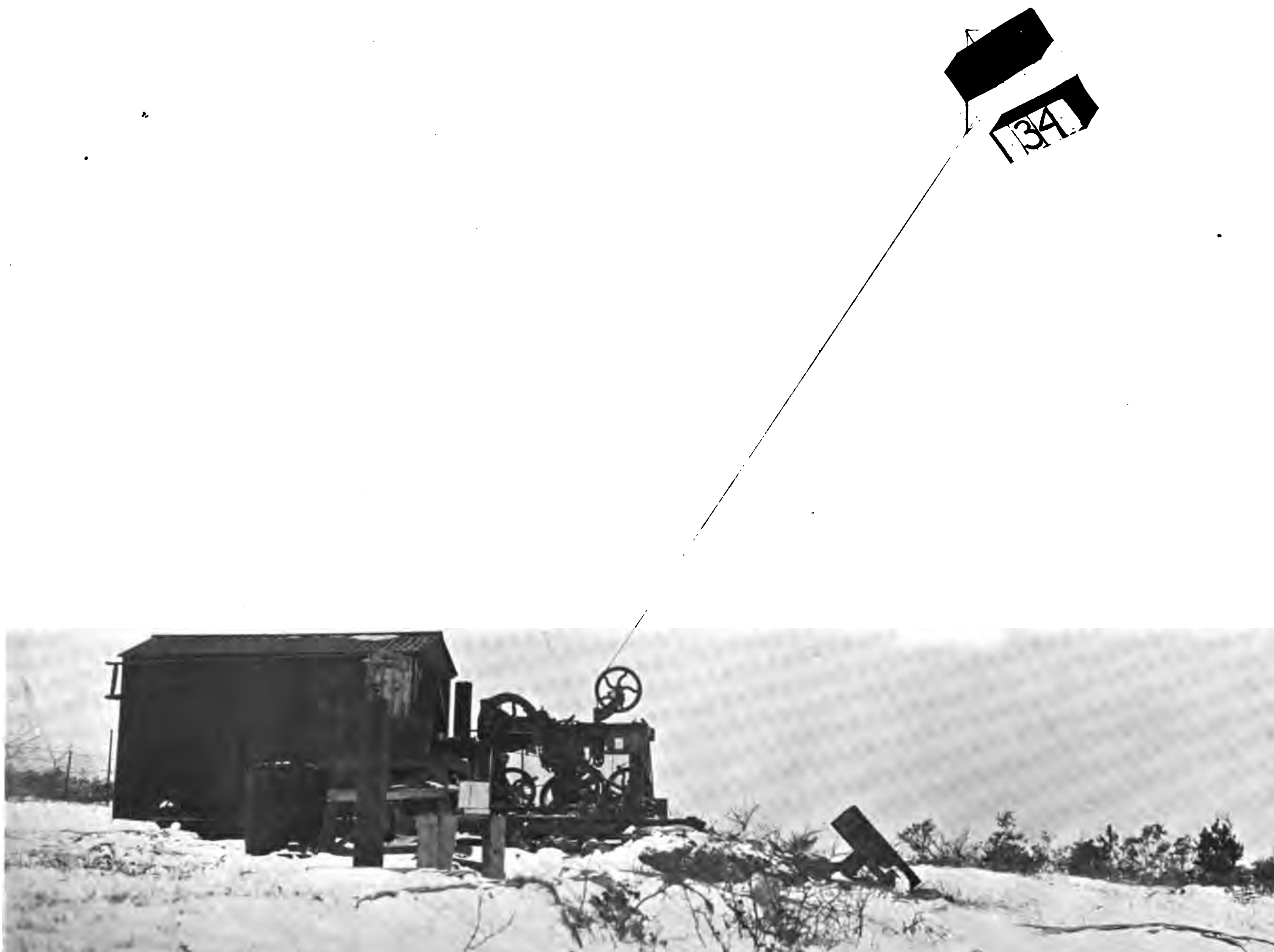
ADDITIONAL ERRATA IN THE BLUE HILL OBSERVATIONS, 1890–98.

Vol. XXX, Part II, p. 113, February, lowest temperature, 0 should be 1.
Vol. XXX, Part II, p. 193, heading Hourly Wind Movement, omit Hourly.
Vol. XXX, Part II, p. 195, heading Hourly Precipitation, omit Hourly.
Vol. XL, Part I, p. 15, June, minimum temperature, 42° F., 5°.6 C., should be 41° F., 5°.0 C.
Vol. XL, Part II, p. 85, October, minimum temperature, 32° F., 0°.0 C., on 31 should be 30° F., —1°.1 C., on 25.
Vol. XL, Part III, p. 198, eighteenth line from top, maximum should read minimum.
Vol. XL, Part IV, p. 227, December 29, minimum temperature, 3 should be **3**.
Vol. XL, Part V, p. 362, May, 8 A.M., 5.2 should be 5.7.
Vol. XL, Part V, p. 366, pressure for year in mm, 744.3 should be 744.5.
Vol. XLII, Part II, p. 153, July, mean of max. and min. temperature, 68°.8 should be 69°.2.
Vol. XLII, Part II, p. 179, Special Phenomena, first line, Feb. 16 should be Feb. 1.
Vol. XLII, Part II, p. 181, unmelted snow at Base Station in April, should be 6; Year, 80 should be 86; Departures, + 18 should be + 24.

END OF VOLUME XLIII, PART II.



BEGINNING A KITE-FLIGHT ON BLUE HILL.

ANNALS

OF

THE ASTRONOMICAL OBSERVATORY OF HARVARD COLLEGE.

EDWARD C. PICKERING, DIRECTOR.

VOL. XLIII.—PART III.

OBSERVATIONS AND INVESTIGATIONS

MADE AT THE

BLUE HILL METEOROLOGICAL OBSERVATORY,

MASSACHUSETTS, U.S.A.,

IN THE YEARS

1901 AND 1902,

UNDER THE DIRECTION OF

A. LAWRENCE ROTCH.

WITH APPENDICES, CONTAINING THE OBSERVATIONS WITH KITES, 1897–1902, AND A DESCRIPTION OF THE KITES AND INSTRUMENTS.

CAMBRIDGE:
PUBLISHED BY THE OBSERVATORY.
1903.

CONTENTS OF PART III.

INTRODUCTION.

THE present publication contains the regular observations made during the years 1901 and 1902, a discussion by the writer of the audibility as affected by weather conditions, based on observations during 1901, the observations obtained with the kite-meteorograph during the years 1897 to 1902, and a description by Mr. Fergusson of the kites and instruments.

The Maintenance and Personnel. — All the expenses of the Observatory continue to be paid by the undersigned, except the cost of publishing the investigations and observations in these Annals which, latterly, has been borne entirely by the Harvard College Observatory. There has been no change in the staff: the undersigned directs the work; Mr. H. H. Clayton is the meteorologist; Mr. S. P. Fergusson has charge of the instruments, and Mr. A. E. Sweetland attended generally to the observations. During the months of January and February, 1902, Mr. Otto Knopp, formerly assistant at the Aeronautical Observatory of the Royal Prussian Meteorological Institute, was employed in the construction of kites and accessories. Mr. G. W. Pickard conducted privately the investigations mentioned hereafter, in which he was aided by Mr. J. P. Fox. Mr. L. A. Wells at various times assisted in the regular observations.

Since the above was in type, the director is obliged to chronicle the first death that has occurred in his staff, namely, that of Mr. Sweetland, which occurred May 8, 1903, at his home, where he had been confined by illness for two months. Mr. Sweetland, who was thirty years of age, had been connected with the Observatory since 1896, and had previously been interested in meteorological questions, especially cloud formations. A discussion of this subject, as well as other investigations by him, have appeared in these Annals. Mr. Sweetland was a conscientious and accurate observer, always devoted to the interests of the Observatory, and the director desires to record the great loss sustained by himself and his assistants in the untimely death of their youngest associate.

The Enlargement of the Observatory. — This was begun in May, 1902, and by the end of the year was nearly completed. The chief object was to provide a fire-

proof room for the library and storage for the kites, and, therefore, a two-story stone building, with a floor space of 28 × 15 feet, was erected upon the site of the wooden shed at the westerly side of the Observatory. No wood enters into the construction of the new building, except in the roof, but the ceilings of each room are tile arches of cohesive construction. A brick wall, with fire-doors, separates this building from the older part of the Observatory. The storage-room for kites, in the lower story, has a maximum height of ten feet and a capacity for six large kites; the library above is fitted with steel shelving, having a total length of 440 feet, which will contain about 5000 volumes and the records of the Observatory during many years. In the corners of the interior frieze are placed copies of eight bas-reliefs on the Horologium of Andronikos Kyrrhestes at Athens, representing the allegorical figures of the winds. A much-needed bathroom has been provided, and in a two-story extension of the old building to the south are two new bedrooms, one of the former chambers being converted into a study for the director, the adjacent one thrown into the hall and the workshop removed to the lower chamber. The new rooms, and most of the older portion of the Observatory, are heated by hot water circulating through radiators from a boiler in the basement. The approach to the tower was enlarged and the whole roof covered with copper in place of tin, which required frequent painting. The total cost of these additions and alterations, amounting to about $7,000, is paid by the undersigned.

The Stations, Instruments and Observations. — The three stations have been maintained as during previous years, but with the commencement of the century it seems advisable to describe them again. The primary station is the Observatory on the summit of Great Blue Hill, where direct readings of the barometer and thermometers are made at 9 A.M. (until June, 1901, at 8 A.M.), 2 and 8 P.M. The precipitation and extreme temperatures are read at the last-named hour when the meteorological day ends and the sheets of the self-recording instruments are changed. Observations of the level and position of the clouds, with measurements of their direction of motion and relative velocity are made, whenever possible, at the first two hours named, while the prevailing kind and amount of cloud are noted each hour during the daytime. The times of beginning and ending of precipitation, thunder and lightning, optical phenomena, etc., are recorded, so far as possible, and the degree of visibility of mountains to the westward is observed twice a day. Continuous automatic records are maintained of the following elements: atmospheric pressure (on daily, weekly, and monthly sheets), air-temperature and relative humidity, wind-direction and velocity (distance travelled and rate), precipitation, bright sunshine (daily and weekly records), and cloudiness at night in the vicinity of the pole star.

The two secondary stations are situated below the Observatory and north-northwest of it: one at the base of Great Blue Hill, at the residence of Mr. Clayton; and the other, which is managed by Mrs. H. M. Dean, in the Neponset Valley. In May, 1902, the latter station was removed from the land of the Metropolitan Park, on the bank of the Neponset River, to a new site, about a quarter of a mile west-northwest, but less than ten feet higher. In July, 1902, a recording Robinson anemometer was placed on the roof of Mr. Dean's house. There are thermographs at both stations, but a recording rain-gauge is maintained only at the Base Station. Daily record sheets are used on the rain-gauge and on the thermograph in the valley, and weekly sheets on the other instruments. Hygrometric records are now obtained at the Valley Station only when kite-flights are made. Direct readings of the maximum and minimum thermometers are made also at these stations at 8 P.M., and the precipitation is measured at the end of the storm. At all the stations the automatic records are controlled by the direct readings of the standard instruments. A summary of the observations is sent each month to the United States Weather Bureau for publication in the Bulletin of the New England Climate and Crop Service and in the Monthly Weather Review. The original records are occasionally introduced as evidence in the courts.

The Investigations. — Besides maintaining the routine observations and automatic records at the three stations, several investigations have been undertaken, chief of which is the exploration of the air with kites. The observations obtained with the kites, from the commencement of these observations in August, 1894, until February, 1897, together with the corresponding observations at the ground, a discussion of them and a description of the apparatus employed, were published in Volume XLII, Part I, Appendix B, of these Annals. A discussion of the results obtained from some later kite-flights, with a description of the newer apparatus, appeared in Bulletins Nos. 1 and 2, 1898, Nos. 1 and 3, 1899, and No. 1, 1900. The Appendices to the present publication contain the kite-observations, with the simultaneous ground-observations, from March, 1897, to the close of the year 1902, and a description of the apparatus now in use. A discussion of these observations is reserved for subsequent publication. During 1901 records were obtained from the kite-meteorograph in ten flights, the average of the highest points attained in each of these flights being 2400 metres, or 7870 feet, above sea level; and the greatest height being 3825 metres, or 12,550 feet, on March 7. Beginning with December, 1901, kite-flights, in coöperation with similar ascents of kites and balloons in Europe, were attempted every month upon a certain day that was appointed by the International Committee for Scientific Aeronautics, of which the writer is the American

member. During 1902 thirteen flights were made, of which ten were upon the international days specified. In two of the flights the upper kites, with the meteorograph, broke away and were lost in the ocean, but it is probable that the height attained during the flight of October 7 exceeded 5000 metres, or 16,400 feet. The average height of the flights from which records were obtained is 2420 metres, or 7940 feet, this being little more than during the preceding year; but the maximum height of 4286 metres, or 14,060 feet, on February 6, is considerably greater.

The reason that flights were not made on all the international days was lack of wind at the ground, a velocity of at least six metres per second being required. To ascertain how often there is not such a wind for an interval of twenty minutes, between the hours of 8 A.M. and 8 P.M., the records of the anemometer were examined and twenty-nine days were found during 1901, there being none in February, and a maximum of eight in August. During 1902 there were forty-four such days, of which none occurred in March and the maximum of ten in September. Assuming that sixteen metres per second is the greatest velocity in which kites can be launched safely, it was found that in the two years mentioned there was no gale in which the wind did not fall below this velocity for a period of twenty minutes between the hours specified. The obstacle is, therefore, too little wind; and if it were desired to fly kites every day, or with certainty on any pre-determined day, duplicate kites and apparatus should be installed on board a steam-vessel, which, by steaming in Massachusetts Bay, could create an artificial wind to raise the kites. The practicability of this was demonstrated by the writer and his assistants on August 22, 1901, when, in nearly calm weather, with the wind too light, both on Blue Hill and at sea-level, to lift the kites, they were easily flown from a tug-boat cruising in Massachusetts Bay, and bore the meteorograph to a height of half a mile. To determine whether kites could be flown from a steamship pursuing its regular course, Mr. Sweetland and the writer made the voyage from Boston to Liverpool between August 28 and September 5, 1901, and although nearly calm weather prevailed, the eastward motion of the vessel at the rate of eight metres per second, made it possible to fly the kites, with the attached meteorograph, on five of the eight days occupied by the voyage; and, had it been feasible to alter the course of the vessel, so as to produce a favorable resultant wind, the kites might have been flown every day. These experiments supplied the observations which are given in Table XIV, and they are important, not only because they furnished probably the first instrumental data at a considerable altitude over the Atlantic Ocean, but also because they showed that, in this

way, observations high above the sea might be obtained in all weather conditions, severe gales only excepted, provided the steamer from which the kites are flown is so manoeuvred as to bring the wind to a suitable velocity. Perhaps the most useful application of this method would be to an investigation of the meteorological conditions above the trade-winds and doldrums, a project that the writer proposed personally, and which received the approval of the International Aeronautical Congress, at Berlin in May, 1902. Details of the plan are given in the Protokoll über die dritte Versammlung der Internationalen Kommission für wissenschaftliche Luftschiffahrt and in the Washington Monthly Weather Review for July and September, 1902.

Other investigations have been conducted during the past two years as follows: The audibility at Blue Hill, under various conditions of weather, of a fixed source of sound situated in Hyde Park, about three miles north, was determined by observations during 1901, and is discussed by the writer in the present publication. During the same year observations were begun to ascertain the effect of weather conditions upon the optical refraction of the lower atmospheric strata. For this purpose the apparent angular elevation, above a 650-foot plane, of Mount Wachusett, forty-four miles west-northwest and 2018 feet high, was measured at the hours of 8 or 9 A.M. and 2 P.M. At first a surveyor's transit was employed, but after February 13 an engineer's precise level was loaned by the Massachusetts Institute of Technology. It was found that Mount Wachusett was frequently obscured by haze, and, therefore, measurements of this point were abandoned at the close of 1901, and a nearer object which could be seen at night was substituted. The object selected was a lighthouse known as Boston Light, lying fourteen miles northeast of the Observatory, about half of this distance being over the water of Boston Harbor. The angular depression of the lantern below the 650-foot plane was measured with the precise level three times a day, viz., at 9 A.M., 2 and 8 P.M., whenever the tower was visible, the light serving as a sighting point in the evening. The results will probably be discussed later.

Investigations upon the electrification of the air and the quantity of carbon dioxide contained in it were conducted at the Observatory by Mr. G. W. Pickard, who reported as follows: Commencing July 9, 1902, a number of electrometer measurements of atmospheric electrification were made, using a Kelvin portable electrometer with burning touch-paper for a collector. In all of these measurements the electrometer was placed on the edge of the stone coping of the tower, the collector being about fifty centimetres above the coping, and in all cases on the windward side of the tower. The probable error in any reading was found to be

less than ± 15 volts. With a single exception, the electrification was positive in sign with values ranging from $+56$ to $+976$ volts. So far as these measurements have been carried, they have shown two maxima of potential during the day, which are not always well-defined, and sometimes merge into one, occurring about noon or a little before, but, in the majority of cases, there is a steady fall of potential from 2 P.M. till late in the evening, when the electrification seems to reach a constant and low value. On the afternoon of August 2, readings were taken while a thundershower was passing over the Hill and a negative electrification of -4500 volts was read, while on the afternoon of September 20, with the top of the Hill in a stratus cloud, a positive potential of $+976$ volts was found. Measurements of atmospheric potential were made, mostly during the afternoons, on 25 days during the year 1902.

For the determination of carbon dioxide in the air, an apparatus similar to the one used by Professor Atwater in his calorimeter experiments was employed. The air was drawn through the apparatus by an aspirator, the volume being determined by measuring the amount of water drawn from the aspirator and correcting for atmospheric and vapor-pressure, carbon dioxide, etc. The air first passed through a U-tube filled with fragments of pumice saturated with sulphuric acid to absorb the water-vapor, then through a second U-tube filled with fragments of soda-lime to absorb the carbon dioxide; and, finally, through a third tube, filled like the first with pumice, saturated with sulphuric acid, to absorb any moisture that might be taken up from the soda-lime by the current of air. The increase in weight of the second and third tubes gave directly the weight of the carbon dioxide in the air passed through the apparatus. A Troemmer analytical balance, sensitive to one twentieth of a milligram, was used to weigh the tubes, and, as ten or more litres of air could be drawn through for each test, a result accurate to one part in one thousand might be expected, but, up to the present time, only a few preliminary tests have been made with the apparatus.

The Local Weather Forecasts.—Flags indicating precipitation and cold-waves were displayed on the tower of the Observatory as heretofore, according to the local forecasts for twenty-four hours of the United States Weather Bureau, revised at Blue Hill from the local indications. Information regarding the probable weather has also been given frequently by telephone to officials of neighboring towns, managers of railways and other companies, and to individuals; but this practice is discouraged, both on account of the interruption to the scientific work of the staff of the Observatory and because sufficient telegraphic data for the United States are not available here to enable forecasts to be made advantageously.

The Library. — There were acquired by exchange, gift, or purchase — chiefly the former — 250 books and pamphlets relating directly or indirectly to meteorology in 1901, and the same number in 1902. This number does not include separate volumes of sets, or about thirty periodicals and registers of observations received monthly or oftener. The old library-room now contains about 2900 volumes of climatological and allied observations, unbound monthly parts being counted separately, but loose sheets counted as if stitched together. In the new library-room are 660 books, 740 volumes of periodicals, 86 volumes of maps, and 3340 pamphlets, etc., in boxes. The local meteorological records are contained in 140 file-cases of record-sheets from the automatic instruments, placed in a fire-proof vault, and in 50 books of manuscript observations and clippings from newspapers, etc. Parcels sent by mail to the Observatory should be addressed Hyde Park, Massachusetts.

A. LAWRENCE ROTCH.

BLUE HILL METEOROLOGICAL OBSERVATORY,
May, 1903.

EXPLANATION OF TABLES I TO VIII.

Tables I and V contain the observations made at the summit at 8 A.M. and 8 P.M., arranged in the international form, as recommended by the International Congress of Vienna in 1873. The wind velocity, however, is given in metres per second, instead of its force on a scale of 0 to 12; and some slight deviations from the Vienna scheme, which are found in the publications of the Prussian, Austrian, or Swiss meteorological bureaus, have been adopted here and in Tables II and VII. Among these are the departures of the means and totals from the normals at the foot of the columns. Following the recommendation of the Paris Conference of 1896, distant thunder and lightning have been noted separately in the Remarks, and in Tables II and VI the days with thunderstorms include only storms in which both thunder and lightning were observed. Commencing with 1901 the atmospheric pressure, vapor-pressure and precipitation are expressed in millimetres, so that all the data now appear in metric units. Practical considerations have led to the retention of Fahrenheit degrees. The explanations preceding Table I apply equally to Table V.

Tables II and VI contain summaries for the years, arranged also in the international form, with the data expressed in both English and metric measures and

Centigrade degrees. As the barometer is now read in millimetres, the values of the atmospheric pressure in these units have been converted into inches, and not the inches into millimetres, as formerly. For the precipitation, however, the inches in which the original record is made have been converted into millimetres. The mean monthly values of atmospheric pressure, air-temperature, and relative humidity are not the simple means of the observations at 8 A.M., but have corrections which are determined from the departures of the means of these hours from the means of the twenty-four hours given in Part II of Vol. XXX. The clear, fair, and cloudy days are determined from the daily mean of the cloudiness each hour, from 7 A.M. to 8 P.M. When the mean cloudiness is between 0 and 2 inclusive, the day is clear; when between 3 and 7 inclusive, fair; and when between 8 and 10 inclusive, cloudy. This method has been followed each year since 1891; previously the clear, fair, and cloudy days were obtained from the daily percentage of possible bright sunshine. The number of hours the wind blew from each of the eight points of the compass, which replace the "number of times observed" in the international form, is removed from its place in Tables II and VI for convenience of printing. Under "Special Phenomena," appended to these tables, the first and last frosts are those, whether light or severe, noticed at the Valley Station; the cherry blossoms were observed near the Base Station and the blueberries near the summit of the hill. The normals for the vapor pressure and for the number of days with gales of fifty or more miles per hour (true wind velocity) are computed only for the years subsequent to 1891.

In the supplementary Tables II and VI are given some additional data regarding sunshine and wind. The percentage of possible bright sunshine is determined from the average possible duration of sunshine in latitude 42°, thirty minutes each day being subtracted to allow for the time when the Sun, on account of its proximity to the horizon, does not affect the cards of the Campbell-Stokes instrument. The wind velocity has been mostly obtained from the Richard anemo-cinemograph.

Tables III and IV, and Tables VII and VIII contain the annual summaries of the Base and Valley Stations. The data for these stations could not be published in the international form, because direct observations of temperature are made only at 8 P.M., and readings for 8 A.M. have not been obtained from the record-sheets.

TABLE I.

OBSERVATIONS MADE TWICE DAILY

IN 1901

AT THE BLUE HILL METEOROLOGICAL OBSERVATORY.

LONGITUDE 71° 6′ 53″ W.   LATITUDE 42° 12′ 44″ N.

HEIGHT OF BAROMETER ABOVE MEAN TIDE, 640 FEET OR 195.1 METRES.

N. B. — This and the following Table are in the form recommended by the International Meteorological Congress of Vienna in 1873, with modifications subsequently adopted.

Maximum and minimum values are denoted by heavy-faced type, except for relative humidity in which only the minima are so indicated.

The barometer is corrected to 32°, but is not reduced to sea level nor to standard gravity.

Maximum and minimum temperatures are for the preceding 24 hours.

The normal vapor pressure is for the years since 1891.

In the cloudiness column the occurrence, at the hour of observation, of rain, is indicated by ●, snow or sleet by *, fog by — below the amount of cloud.

Wind velocities, which are true velocities and are expressed in metres per second, are for the five minutes preceding the hour named.

Precipitation is the amount during the preceding 24 hours. Absence of precipitation is denoted by a dot (.), and amounts less than 0.25 millimetre, or .01 inch, are recorded 0.0.

The international symbols used in the Remarks, and in Table II, are: —

Rain	V Frostwork (Rough) forming.	T Distant Thunder.
Snow.	Ice Coating (Smooth) forming	∞ Haze.
Hail.	Drifting Snow.	⊕ Solar Halo.
Sleet.	Floating Ice-Crystals.	Solar Corona.
Fog.	Gale.	Lunar Halo.
Dew.	Thunder Storm.	Lunar Corona.
Hoar Frost.	Distant Lightning.	Rainbow.
Surrounding country more than half under snow.		Aurora.

The intensity of a phenomenon is denoted by an exponent 0 indicating slight; 2, great, and an absence of exponent, moderate intensity.

In the Remarks the time of occurrence is expressed in hours and tenths; morning and afternoon are indicated by A and P, respectively; midnight and noon by 12 P and 12 M respectively, the hours being counted from 0 to 12, commencing with midnight. The continuance of a phenomenon is indicated by a dash (—).

JANUARY, 1901.

Date.	Atmospheric Pressure, in mm. 700+ A.M. 8.00	P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure, in mm. A.M. 8.00	P.M. 8.00	Relative Humidity, in per cent. A.M. 8.00	P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00	P.M. 8.00	Precipitation, in mm. P.M. 8.00
1	46.9	53.9	34	21	38	21	3.5	1.0	72	42	7	2	W 9	NW 8	.
2	55.1	52.3	15	22	29	14	1.4	1.1	72	42	0	0	W 5	W 8	.
3	59.9	60.1	1	13	22	1	0.5	0.5	51	33	0	0	N 10	S 6	0.0
4	53.9	44.9	10	27	28	8	0.9	1.5	56	47	3	5	SW 7	W 7	.
5	49.1	51.8	15	17	27	15	1.4	0.7	70	36	1	0	NW 6	W 7	.
6	50.7	48.9	17	27	34	12	1.6	1.6	75	48	0	4	W 9	W 7	.
7	45.4	43.2	29	32	38	23	2.6	4.0	69	88	9	1	SW 8	W 9	0.0
8	50.8	49.6	23	27	36	22	2.3	3.1	76	90	0	5	N 9	S 11	.
9	44.5	50.8	39	33	48	27	5.6	2.5	91	58	8	3	SW 10	N 9	0.0
10	53.9	46.1	27	32	33	25	2.3	4.6	66	100	10	10●	E 9	E 10	8.1
11	45.6	42.0	18	32	32	17	2.4	4.6	100	100	10	10●	N 6	NE 5	9.7
12	32.2	35.0	28	28	34	20	3.0	2.9	100	78	10*	2	N 10	W 10	17.8
13	41.5	44.0	18	19	28	18	2.0	1.7	81	71	2	0	NW 9	NW 8	.
14	44.5	41.7	16	26	27	14	1.7	2.9	83	84	1	10	NW 4	S 6	.
15	39.8	41.4	30	36	36	26	4.2	5.4	100	100	10●	10	SE 7	SE 6	1.0
16	41.0	32.7	35	44	45	34	5.2	6.3	100	86	10	5	SE 9	S 12	0.5
17	35.4	33.6	35	31	44	31	3.6	4.4	72	100	7	10●*	W 7	N 4	1.3
18	29.2	37.5	24	5	31	5	2.7	0.6	89	53	9	0	NW 7	W 16	3.3
19	44.4	54.6	3	−4	5	−4	0.7	0.3	69	47	10	0	N 5	NW 12	.
20	59.3	49.7	−5	23	23	−9	0.3	2.4	47	82	3	8	W 10	SW 14	.
21	45.1	41.9	30	39	42	22	2.7	3.8	68	66	6	10	SW 12	SW 11	0.0
22	48.2	54.5	31	20	39	20	3.0	2.0	75	78	2	2	N 9	E 6	.
23	54.0	48.1	16	31	31	14	2.0	3.8	88	90	9	10	N 6	NE 8	0.0
24	38.9	30.6	26	31	31	26	3.5	4.4	100	100	10●	1	N 9	NW 7	4.6
25	30.1	33.3	29	31	32	28	4.0	3.0	100	75	10	1	NE 7	N 7	.
26	37.5	33.0	21	24	32	21	2.0	1.8	71	60	2	2	N 10	N 9	.
27	25.0	19.8	17	24	28	17	1.7	1.7	79	59	9	8	NW 8	W 6	0.0
28	18.2	22.0	17	21	26	17	1.5	1.6	67	61	4	10	NW 9	NW 14	.
29	30.7	38.9	15	18	23	14	1.3	1.1	67	58	6	0	NW 6	W 5	0.0
30	43.5	40.9	15	21	27	13	1.5	2.5	72	93	7	10*°	SW 4	E 6	0.0
31	34.2	35.0	20	23	27	18	2.4	2.9	97	97	10*	10●	N 10	NW 4	5.8
Means	42.9	42.3	20.8	25.0	31.5	17.1	2.4	2.6	78.2	71.5	6.0	4.8	7.9	8.3	52.1
'86-01	44.7	44.3	21.7	25.1	32.9	17.1	2.6	2.8	76.4	71.8	5.9	5.2	7.8	7.9	105.2
Depart.	−1.8	−2.0	−0.9	−0.1	−1.4	0.0	−0.2	−0.2	+1.8	−0.3	+0.1	−0.4	+0.1	+0.4	−53.1

REMARKS.

2, ∞ A; ⌴ A; ⌴² A in lowlands. **3,** ✱° 0.2? A — 1.7? A; dense smoke in N & NE A — P. **4,** ⊕ 9.7 A — 10.2 A; ∞ A — P. **6,** ∞ in lower air A — P. **7,** ∞² A — P; ✱° 0.2 P — 1.4 P; ✱ 2.0 P, 2.8 P — 4.2 P. **8,** ∞² A — P. **9,** ◍ ? A — ? A; ∞² A — P; ⊕ 1.0 P — 2.5 P. **10,** ∞² A — P; ✱° 11.2 A — 3.3 P; ✱△ 3.3 P — 5.2 P; △◍ 5.2 P — 6.2 P; ◍ 6.2 P — 10.8? P; ☒. **11,** ≡ A — P; ◍ 1.0 P — 2.1 P; ∽² P; ◍△ 2.1 P — 3.4 P; ◍△✱ 3.4 P — 4.5 P; ◍ 4.5 P —; ☒. **12,** ◍ — 7.1 A; ◍△ 7.1 A — 7.8 A; ✱△ 7.8 A — 8.5 A; ✱ 8.5 A — 1.9 P; ∽ A; ≡ A; ☒. **13,** ☒. **14,** Dense smoke on N & NE horizon A — P; ⊕° 11.5 A — 11.7 A, 2.8 P — 3.8 P; ☒. **15,** ✱ ?A — ?A, 7.7 A — 1.2 P; ● 1.2 P — 6.1 P; ≡ A — P; ◍° 9.1 P; ☒. **16,** ≡ A; ◍ 9.2 A — 10.8 A; ☒. **17,** ⊕ 7.7 A — 10.2 A; ≡ P; ✱ 5.5 P —; ☒. **18,** ✱ — 7.3 A, 10.5 A — 0.4 P; ⊹ A; ☒. **19,** ∞² A — P; ☒. **20,** ⊕° 2.1 P — 2.7 P; ☒. **21,** ∞ A — P; ◍° 7.4 P — 7.5 P; ☒. **22,** ∞ A — P. **23,** ∞² A — P; ◍° 7.5 P — 7.9 P, 9.5? P —. **24,** ◍ — 8.5 A; ∽² A; ≡ A — P. **25,** ⋁ A; ∞² A — P. **26,** ⋃² 10.2 P — 10.5 P. **27,** ✱ ? A — ? A; ⏀² 6.0 P — 7.0 P. **28,** ✱ 8.2 P — 11.0? P. **30,** ⊕² 8.4 A — 10.2 A; ✱ 4.1 P —; ☒. **31,** ✱ — 11.0? P; ☒.

FEBRUARY, 1901.

Date.	Atmospheric Pressure, in mm. 700+ A.M. 8.00	P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure, in mm. A.M. 8.00	P.M. 8.00	Relative Humidity, in per cent. A.M. 8.00	P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00	P.M. 8.00	Precipitation, in mm. P.M. 8.00
1	39.0	42.2	12	20	28	11	1.3	1.5	75	64	0	0	W 6	W 8	0.0
2	47.4	49.2	12	18	24	11	1.1	0.8	69	39	0	0	W 7	NW 7	.
3	50.3	47.2	13	23	29	11	1.4	1.3	75	47	1	10	NW 9	NW 6	.
4	38.7	30.6	22	21	29	19	2.7	2.6	95	96	10●	10✱°	NE 6	N 8	15.5
5	28.7	32.6	22	18	25	18	2.6	1.3	95	61	9	10	NW 18	NW 15	3.3
6	33.7	35.7	10	12	18	10	0.8	0.7	57	44	9	0	NW 15	W 13	0.0
7	36.3	39.1	9	15	22	6	0.7	0.7	49	38	0	0	NW 16	W 9	.
8	41.1	41.3	9	14	22	7	0.6	0.7	45	42	0	0	W 8	W 8	.
9	39.1	33.7	8	18	25	6	0.7	1.1	51	53	1	5	NW 8	W 7	. 0.0
10	38.6	42.8	12	17	24	11	1.1	0.8	64	39	0	3	NW 11	NW 13	.
11	46.5	44.6	13	21	28	10	0.8	1.2	48	47	0	3	NW 8	NW 10	.
12	39.3	33.3	18	19	25	18	2.3	1.3	97	55	5	4	W 5	NW 15	0.0
13	29.6	27.6	9	9	25	8	0.8	0.8	56	55	3	0	NW 19	NW 13	.
14	26.0	27.1	8	10	19	6	0.9	1.0	63	62	2	3	NW 10	NW 16	.
15	29.1	28.7	14	26	28	6	1.3	2.1	68	64	1	5	W 10	NW 12	.
16	33.3	33.0	23	31	38	22	2.1	2.9	70	69	7	7	NW 7	W 6	.
17	33.5	34.4	27	27	33	26	3.6	2.2	100	64	6	0	NW 7	NW 7	0.0
18	34.2	35.2	25	29	36	23	2.6	2.5	84	63	6	0	W 4	W 6	.
19	34.0	31.3	23	26	36	22	2.3	2.0	78	59	0	0	W 5	NW 8	.
20	29.2	30.8	17	22	31	16	1.8	1.7	80	61	0	10	NW 8	NW 10	.
21	35.1	40.0	17	14	22	13	1.3	1.0	62	53	9	0	W 9	W 7	0.0
22	40.4	39.7	13	22	28	11	1.1	1.6	64	59	4	8	SW 5	W 4	.
23	43.8	41.3	11	23	27	9	1.1	1.7	66	59	0	10	W 5	S 3	0.0
24	30.0	38.4	15	16	23	15	2.0	1.0	98	49	10✱°	0	NW 9	W 11	7.6
25	43.0	42.1	14	27	33	9	1.3	2.3	64	66	4	8	SW 9	SW 9	.
26	39.2	35.6	31	30	43	25	3.5	2.0	85	50	9	5	S 9	W 12	.
27	39.9	43.7	17	17	30	15	1.4	1.2	65	55	0	0	W 11	W 10	.
28	46.9	49.5	11	17	22	7	1.0	1.1	64	53	0	0	W 10	W 8	.
Means	37.4	37.5	15.5	20.1	27.6	13.2	1.6	1.5	71.0	55.9	3.4	3.6	9.1	9.3	26.4
'86-'01	44.1	44.0	21.7	25.2	33.2	17.4	2.6	2.7	75.1	70.0	5.7	5.2	8.0	8.2	101.7
Depart.	−6.7	−6.5	−6.2	−5.1	−5.6	−4.2	−1.0	−1.2	−4.1	−14.1	−2.3	−1.6	+1.1	+1.1	−75.3

REMARKS.

1, ∞² A; ⊠. **2,** ∞ A; ⊠. **3,** ⊔² 7.5 P — 8.2 P; ⊠. **4,** ✱ 5.2? A — 7.6 A; △ ◍ 7.6 A — 10.3 A; ᔓ A; △ ✱ 10.3 A — 11.1 A; ✱ 11.1 A —; ⊠. **5,** ✱ — 7.7 A, 8.5 A — 11.7 A, 3.5 P — 4.5 P; ✢² A — P; ⊠. **6,** ✱° 9.7 A — 9.9 A; ⊠. **7,** ⊠. **8,** ⊠. **9,** ∞² A — P; ✱ 1.9 P — 2.2 P, 3.7 P; ⊠. **10,** ⊠. **11,** ⊠. **12,** ✱ 2.3? A — 7.2 A; ∞ A; ✱° 0.7 P — 3.3 P; ⊠. **13,** ⊠. **14,** ∞ A; ⊠. **15,** ⊠. **16,** ∞ P; ⊠. **17,** ✱° 2.5? A — 6.3? A; ⊠. **18,** ⊠. **19,** ∞ A — P; ⊠. **20,** ∞ A; ⊠. **21,** ✱° 9.0 A — 9.3 A; ∞ A — P; ⊠. **22,** ∞ A; ⊕ 8.8 A — 10.0 A; ✱ 9.7? P — 11.0 P; ⊠. **23,** ∞ A — P; ⊕° 11.0 A — 2.7 P; ⊕² 2.8 P — 3.3 P; ✱² 11.9 P —; ⊠. **24,** ✱ — 10.0 A; ⊠. **25,** ∞² A — P; ⊔² 7.5 P — 9.2 P —; ⊠. **26,** ∞² A — P; ⊕ 9.5 A — 10.6? A; ⊔² 7.5 P — 8.7? P; ⊠. **27,** ⊠. **28,** ⊠.

MARCH, 1901.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	47.9	37.4	17	38	38	12	1.4	3.0	65	57	4	10	SW 9	SW 15	0.0
2	36.1	40.1	39	34	39	34	4.6	4.0	76	82	10	10	SW 5	N 8	3.6
3	48.5	45.5	19	28	34	19	1.5	3.0	66	83	6	10	NE 7	S 11	0.0
4	43.2	41.5	38	38	49	28	5.2	3.8	89	67	10	10	W 8	S 8	7.4
5	34.1	35.0	32	25	39	25	4.6	2.2	100	72	10	9✱°	W 2	W 11	7.6
6	41.2	48.0	9	8	25	8	0.8	0.6	55	42	0	0	W 12	W 10	0.0
7	51.7	50.0	9	24	29	4	0.8	1.8	54	60	0	0	W 6	S 8	.
8	49.4	46.3	30	35	44	23	2.9	3.6	71	71	1	9	SW 8	S 9	.
9	39.8	42.7	40	40	42	34	5.2	6.3	81	100	10●	10●	SW 9	NW 6	10.9
10	52.6	53.0	29	28	40	27	2.7	2.7	73	73	9	10	NE 10	E 10	0.5
11	39.1	28.0	37	34	49	28	5.6	4.9	100	100	10●^{2}	10	SE 17	NW 11	53.6
12	32.7	38.1	33	31	37	30	2.7	2.6	62	65	10	1	W 14	W 9	0.0
13	43.4	42.5	28	35	40	26	2.0	2.7	57	57	3	10	NW 10	SE 5	.
14	38.1	40.4	30	29	35	28	4.2	3.5	100	92	10✱	10	NE 7	NE 5	6.1
15	39.3	39.1	27	29	31	26	3.1	3.1	88	85	10	10✱°	NE 3	NE 2	0.3
16	40.0	42.4	29	32	35	27	3.5	4.4	87	97	9	10✱	N 3	W 2	0.0
17	44.0	43.6	24	32	41	20	1.5	2.0	54	49	0	0	NW 5	W 4	0.0
18	46.6	44.3	32	39	51	27	3.1	3.5	73	59	3	5	W 5	SW 10	.
19	48.0	54.7	33	26	40	25	2.4	2.2	55	64	4	2	N 11	E 6	.
20	54.4	49.1	31	33	34	25	2.9	4.7	71	100	1	10●°	E 8	E 8	0.0
21	41.4	36.8	54	46	56	33	8.5	7.9	82	100	10	10●	S 16	S 11	33.3
22	41.3	43.9	34	36	46	30	3.0	2.9	63	56	0	5	W 6	W 6	2.8
23	48.6	48.0	29	39	48	26	2.2	3.1	57	54	0	1	NW 6	SW 5	.
24	47.8	46.0	38	43	49	32	3.0	6.8	55	98	10	10●°	SW 5	S 4	3.8
25	47.3	46.4	38	35	44	35	4.7	5.2	83	100	9	10	NE 7	E 9	2.8
26	40.7	32.2	36	38	42	34	5.4	5.8	100	100	10●^{2}	10●^{2}	E 11	NE 5	36.1
27	26.8	30.1	35	39	52	34	5.2	4.0	100	67	10	7	NW 6	W 10	18.3
28	28.8	30.6	32	28	39	28	2.9	2.3	68	62	8	9	W 11	NW 11	.
29	32.8	36.6	24	26	33	21	1.9	1.9	62	59	6	8	NW 12	NW 13	.
30	35.8	35.6	26	34	41	24	1.8	2.3	56	50	0	1	NW 17	NW 12	.
31	34.0	29.8	31	32	43	25	2.7	2.6	67	64	4	10	NW 11	NW 15	0.0
Means	41.8	41.2	30.4	32.7	40.8	25.7	3.3	3.5	73.2	73.7	6.0	7.3	8.6	8.4	187.1
'86-01	43.4	42.9	29.0	31.8	40.0	24.7	3.3	3.4	73.7	69.4	6.0	5.4	8.1	8.3	111.9
Depart.	−1.6	−1.7	+1.4	+0.9	+0.8	+1.0	±0.0	+0.1	−0.5	+4.3	0.0	+1.9	+0.5	+0.1	+75.2

REMARKS.

1, ∞ A; ∞^{2} P; ✱ 2.8 P — 4.6 P; ⊠. **2,** ● 8.7 A — 0.2 P; ✱ ● 0.2 P — 1.1 P; ● 1.1 P — 1.8 P; ∞^{2} A — P. **3,** ✱° 8.0 A; ∞ A. **4,** ● 0.5? A — 5.5? A, 9.2 P —. **5,** ● — 2.5? A; ✱ 2.5? A — 6.5? A; ∽ A; ≡ A; ∞ A — P; ✱° 5.4 P — 8.2 P. **7,** ∞ A — P. **8,** ∞^{2} A — P; ⊕^{2} 10.0 A — 1.0 P; ● 11.2? P —. **9,** ● — 3.0? A, 7.6 A — 9.2? P; ≡ P. **10,** ∞^{2} A — P; ● 11.3 P —. **11,** ●^{2} — 2.7? P; T? 10.1 A; ∽ A; ≡ A — P; ● 3.7 P — 5.7 P, 10.5? P —. **12,** ● — 2.7? A; ✱ 2.7? A — 3.5? A. **13,** ⊕^{2} 9.5 A — 1.5 P; △ ● 11.1 P —. **14,** △ ● — 4.0? A; ∽ A; ≡ A; ✱ 4.0? A — 10.9 A, 0.7 P — 4.2 P; ✱° 6.2 P. **15,** ∞ A — P; ✱° 6.2 A; ✱ 10.1 A — 9.0? P. **16,** ∞^{2} in W A — P; ✱° 8.1 A — 0.2 P; ✱ 5.9 P — 10.7? P. **17,** ⊕° 2.8 P — 3.6 P. **18,** ∞^{2} A; ∞ P. **19,** ∞ A — P. **20,** ∞ in upper air A; ≡ P; ●° 1.8 P — 10.2? P. **21,** ●^{2} 9.3 A — 10.1? P; ≡ P. **22,** ∞^{2} A; ∞ P. **24,** ∞ A; ≡ P; ● 10.5 A — 10.8 A, 0.8 P —. **25,** ● — 1.3? A; ∞^{2} A — P. **26,** ●^{2} 1.5? A — 2.5? P; ≡ A — P; ● 4.0 P —. **27,** ● — 5.0? A; ≡ A. **31,** ✱° 5.7 P — 6.2? P, 9.2? P — 10.8 P.

APRIL, 1901.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	34.0	42.0	36	42	48	30	3.6	4.6	71	69	10	4	NW 14	NW 6	0.0
2	46.6	46.5	37	36	44	35	5.6	5.2	100	96	10●°	7	NE 6	SE 5	0.0
3	40.4	29.5	36	43	43	35	5.2	7.0	97	100	10●2	10●2	E 9	E 14	27.9
4	31.6	34.3	37	38	44	35	5.6	5.8	100	100	10	10	NE 8	NE 8	3.3
5	36.9	38.3	37	38	41	36	5.6	5.8	100	100	10	10●°	N 5	NW 2	0.0
6	38.2	36.1	39	40	51	36	5.6	6.3	98	100	10●°	10●2	S 4	E 13	3.6
7	26.5	29.0	47	39	50	39	8.2	6.0	100	100	10●°	10●°	SE 12	NE 8	32.3
8	31.4	34.8	39	40	41	37	6.0	6.3	100	100	10●°	10●°	N 8	NW 4	3.1
9	34.9	37.0	38	38	42	36	5.8	5.8	100	100	10●°	10●°	NW 5	N 7	4.8
10	39.3	40.9	39	41	44	37	6.0	4.4	100	70	10●°	10	N 7	N 10	6.1
11	42.3	46.2	37	42	43	34	3.6	3.5	69	56	10●°	10	N 13	NE 11	1.8
12	48.6	47.9	38	48	56	33	4.2	2.6	70	32	0	0	N 10	SW 2	.
13	47.9	48.1	47	45	57	35	2.3	2.5	31	34	0	3	NE 8	S 5	.
14	48.4	47.1	48	41	58	37	2.5	2.6	32	43	4	8	SE 2	E 8	.
15	45.0	43.8	40	40	46	37	4.9	4.4	82	72	10	10●°	NE 12	NE 14	0.8
16	42.7	46.1	37	41	41	35	5.6	5.4	100	84	10●2	10	NE 16	NE 11	33.0
17	48.1	49.4	40	35	42	35	4.7	5.2	76	100	5	10	NE 13	NE 8	0.0
18	50.1	50.2	36	35	39	34	5.2	5.2	100	100	10	10	E 6	E 1	0.3
19	50.0	48.6	36	39	52	33	5.4	6.0	100	96	10	9	SE 2	SE 6	0.0
20	47.2	45.3	37	39	39	35	5.6	6.0	100	100	10●°	10●°	E 10	NE 13	1.3
21	43.5	41.3	41	49	50	39	6.5	8.8	100	100	10●	10●°	E 10	E 13	7.4
22	44.1	46.3	45	42	49	41	7.6	6.8	100	100	10●°	10●°	NE 8	NE 10	2.0
23	48.1	47.7	41	39	42	38	6.5	6.0	100	100	10●	10●°	NE 9	NE 11	1.3
24	44.3	40.1	40	38	40	38	6.3	5.8	100	100	10	10●	NE 13	NE 11	17.5
25	39.2	42.4	40	42	42	38	6.3	6.5	100	100	10●°	10●2	NE 10	NE 11	35.1
26	46.2	51.5	38	40	48	35	3.3	4.6	60	76	10	8	NE 16	NE 9	2.0
27	54.9	56.0	39	38	44	35	4.2	2.9	70	53	5	0	NE 11	NE 9	.
28	57.1	55.1	49	50	61	34	3.0	3.0	35	34	3	0	NE 5	SE 9	.
29	53.6	50.0	62	62	78	45	5.6	4.6	39	33	0	4	N 2	SW 8	.
30	48.5	41.7	51	46	62	44	5.6	7.3	57	95	8	10●	N 6	S 8	2.3
Means	43.7	43.8	40.9	41.5	47.9	36.4	5.2	5.2	82.9	81.4	8.2	8.1	8.7	8.5	185.9
'86-'01	45.0	44.6	42.1	42.6	53.4	35.3	4.8	4.9	69.2	67.8	5.5	5.1	7.7	7.2	77.3
Depart.	−1.3	−0.8	−1.2	−1.1	−5.5	+1.1	+0.4	+0.3	+13.7	+13.6	+2.7	+3.0	+1.0	+1.3	+108.6

REMARKS.

1, ✱° 8.7 A. **2,** ≡ A; ●° 7.0 A — 9.4 A; ∞2 A — P; ⊤2 7.6 P — 8.5 P. **3,** ●2 7.7 A — 9.0? P; ≡ A — P. **4,** ● 9.7 A — 2.6 P; ≡ A — P. **5,** ≡ A — P; ●° 3.2 P — 10.0 P. **6,** ●° 7.7 A — 8.6 A, 1.2 P — 1.6 P; ∞ A — P; ≡ P; ● 2.7 P —. **7,** ●° — 11.8? A; ≡ A — P; ●° 5.8 P —. **8,** ●° — 0.2 P; ≡ A — P; ●° 1.0 P —. **9,** ● —; ≡ A — P. **10,** ●° — 4.7 P; ≡ A; ●° 7.5 P, 9.6 P —. **11,** ●° — 1.3 A, 4.5? A — 9.1 A, 4.8 P, 6.3 P — 6.6 P, 7.5 P — 7.7 P. **13,** ∞2 A — P. **15,** ∞2 A — P; ● 2.7 P — 5.4 P, 8.0 P —. **16,** ● ✱ — 8.0 P.

17, ●° 6.0 P. **18,** ●° ? A; ∞2 A. **19,** ≡ A; ●° ? A — ? A; ∞2 A — P; ⊕ 11.0 A, 4.2 P — 5.0 P. **20,** ≡ A — P; ●° ≡ ? A — 3.0 P; ●° 3.0 P —. **21,** ●° — 9.5 A, 1.6 P — 1.9 P; ≡ A — P; ●° 2.5 P —. **22,** ●° — 9.5 A; ≡ A — P; ● 11.9 A — 5.3 P; ●° 5.3 P —. **23,** ●° —; ≡ A — P. **24,** ●° — 7.3 A; ≡ A — P; ● 8.4 A —. **25,** ●° — 11.7? P; ≡ A — P. **26,** ●° 2.7 P — 3.6 P. **27,** ∞ A. **28,** ∞ A — P. **29,** ∞2 A — P. **30,** ∞2 A — P; ●° 0.7 P?; ● 1.9 P —.

MAY, 1901.

Date.	Atmospheric Pressure, in mm. 700+ A.M. 8.00	P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure, in mm. A.M. 8.00	P.M. 8.00	Relative Humidity, in per cent. A.M. 8.00	P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00	P.M. 8.00	Precipitation, in mm. P.M. 8.00
1	42.6	43.7	42	47	54	39	5.6	4.7	85	58	10	0	NE 6	S 6	3.6
2	41.2	33.5	37	44	49	34	5.6	7.3	100	100	10	10	S 9	SW 9	1.0
3	31.9	39.6	44	46	52	43	4.7	2.2	68	30	8	0	NW 15	NW 13	12.7
4	41.6	40.3	45	52	61	38	2.1	3.8	30	40	0	9	NW 14	NW 5	.
5	35.8	40.3	53	42	58	41	4.2	4.6	42	71	4	6	N 11	NE 6	.
6	42.3	40.3	44	46	62	37	5.2	5.8	72	76	5	2	NE 6	S 8	.
7	39.2	39.5	59	60	75	43	6.3	7.0	49	54	3	1	NW 7	SE 8	.
8	42.4	44.3	64	56	78	51	9.1	4.6	61	40	0	1	S 1	S 9	.
9	46.0	46.6	58	52	70	47	7.0	9.5	57	98	6	10	SE 5	E 6	.
10	45.8	44.0	48	47	52	45	8.5	8.2	100	100	10	10●	NE 5	E 7	8.1
11	38.2	37.5	53	52	64	47	10.2	9.8	100	100	10	10	S 9	S 9	18.0
12	36.7	38.9	52	58	70	48	9.8	6.8	100	56	10	0	SW 7	S 8	0.0
13	39.2	40.8	46	55	64	45	7.9	5.4	100	49	10●	2	N 7	W 6	6.9
14	46.0	46.7	45	54	67	45	4.0	6.3	56	59	0	6	W 5	SW 9	.
15	48.4	47.3	57	57	69	51	6.8	9.1	58	78	8	6	NW 5	SW 6	0.0
16	48.7	47.4	58	57	67	47	7.6	8.8	60	75	0	1	NE 4	S 8	.
17	46.8	44.1	64	55	74	50	7.9	6.5	51	61	0	1	SW 2	S 7	.
18	42.3	41.6	50	46	55	43	7.0	7.9	79	100	10	10	E 4	NE 7	7.1
19	41.5	41.8	45	44	46	44	7.6	7.3	100	100	10●^{2}	10●^{2}	E 8	NE 13	36.3
20	45.0	46.7	42	42	44	42	6.8	6.8	100	100	10●°	10●°	NE 11	NE 8	13.2
21	47.0	45.7	48	55	68	42	8.5	10.2	100	90	10	7	NW 3	S 6	0.0
22	45.4	42.2	69	59	83	52	12.2	11.4	68	88	7	4	SW 4	S 7	.
23	37.5	39.2	64	69	81	55	15.1	10.2	100	56	7	6	SW 8	W 8	5.1
24	42.6	45.1	70	45	80	45	11.4	7.6	63	100	2	10●	SW 2	NE 10	6.3
25	47.6	49.6	44	43	47	43	7.3	6.8	100	96	10●°	9	NE 11	E 5	8.1
26	49.3	45.3	52	48	60	41	6.5	5.4	65	61	3	9	E 5	SE 6	.
27	40.9	34.8	45	45	48	43	7.6	7.6	100	100	10●°	10●	NE 6	NE 12	18.8
28	32.6	37.6	49	58	54	45	8.8	9.8	100	99	10●°	10●°	NE 7	NE 1	5.3
29	41.5	40.8	47	45	55	45	8.2	7.6	100	100	10	10●°	E 9	E 8	0.0
30	41.2	40.7	45	47	58	44	7.6	7.9	100	96	10	10	NE 5	SE 3	0.8
31	39.8	39.8	50	58	68	47	9.1	9.1	100	90	10	7	SW 4	SW 4	0.0
Means	42.2	42.1	51.3	50.8	62.0	44.6	7.6	7.3	79.5	78.1	6.9	6.4	6.6	7.4	151.3
'86-'01	44.3	43.7	53.4	53.0	65.2	45.6	7.7	7.7	74.0	75.4	6.1	5.9	6.1	6.7	99.4
Depart.	−2.1	−1.6	−2.1	−2.2	−3.2	−1.0	−0.1	−0.4	+5.5	+2.7	+0.8	+0.5	+0.5	+0.7	+51.9

REMARKS.

1, ◍—3.0? A; ∞^{2} A; ∞ P. **2,** ≡ A; ∞ A—P; ∢? 10 P; ◍^{2}—; ≡ A—P. **3,** ◍—5.2? A. **7,** ∞ A—P. **8,** ∞^{2} A—P. **9,** ∞^{2} A—P; ⊕^{2} 10.3 A—11.5 A. **10,** ◍ 0.8? A—2.5? A, 2.1 P—2.2 P; ≡ A—P; ◍ 4.4 P—. **11,** ◍—5.0? A; ●° 9.2 A—9.5 A; ∞^{2} A—P; ≡ A—P. **12,** ≡ A; ◍ 9.8 A—11.0 A. **13,** ◍ 5.7? A—10.9 A. **15,** ∞ A—P; ●° 6.4 P—6.6 P. **16,** ∞^{2} A—P. **17,** ∞^{2} A; ∞ P. **18,** ◍ 9.2 A—10.3 A, 0.2 P—7.3? P; ≡ P; ● 9.2 P—. **19,** ● 1.9 P—4.0 P, 9.5? P—. **20,** ◍—11.0? P; ≡ A—P. **21,** ∞^{2} A—P. **22,** ∞^{2} A; ∞ P; ◍ 11.6 P—. **23,** ◍—2.5? A; ∞ A—P. **24,** ∞^{2} A; ∢ in N 5.0 P; ⌈∢ 6.5 P—9.7 P; ● 5.7 P—. **25,** ◯°—8.5? A, 4.1 P—4.9 P; ≡ A. **26,** ◍ 10.7 P—. **27,** ◍°—8.8 A; ≡ A—P; ◯ 11.0 A—. **28,** ◍°—2.7 P, 4.1 P—4.5 P, 7.7 P—? P; ≡ A—P. **29,** ≡ P; ◍° 7.9 P—. **30,** ◍°—? A; ≡ A; ∞ 2 A—P. **31,** ◍° A—? A; ≡ A; ∞ A—P.

JUNE, 1901.

Date.	Atmospheric Pressure, in mm. 700+ A.M. 8.00	P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure, in mm. A.M. 8.00	P.M. 8.00	Relative Humidity, in per cent. A.M. 8.00	P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00	P.M. 8.00	Precipitation, in mm. P.M. 8.00
1	40.1	40.3	48	47	55	47	8.5	8.2	100	100	10●	10●○	NE 8	N 6	1.0
2	42.9	41.7	50	53	66	47	9.1	9.8	100	99	10	10	W 2	S 6	0.5
3	39.5	39.9	56	59	74	52	11.4	7.6	100	62	9	6	SW 4	NW 10	.
4	41.1	41.8	62	64	77	49	9.5	10.2	66	66	0	7	W 7	W 7	0.3
5	45.5	45.0	70	69	84	57	11.4	9.1	62	50	1	8	NW 5	SW 7	.
6	45.3	43.5	72	72	84	61	13.1	11.8	68	58	1	3	S 5	SW 11	.
7	42.2	38.9	62	61	74	59	13.6	13.6	96	100	10	10●	S 10	S 12	2.0
8	38.5	40.0	59	54	67	53	9.5	7.0	74	65	0	1	W 6	W 10	10.4
9	40.2	42.7	52	55	64	45	7.0	8.2	72	72	5	9●	W 12	NW 6	0.8
10	44.7	46.2	59	65	73	48	7.0	8.2	55	51	0	1	NW 10	W 7	0.0
11	48.5	47.6	63	67	79	55	8.2	9.1	55	53	7	0	NW 3	W 5	.
12	47.8	48.3	69	66	81	59	11.8	9.8	66	60	0	1	W 4	SE 3	.
13	51.2	49.5	72	62	77	59	9.5	9.1	47	63	1	2	SE 7	S 9	.
14	46.7	42.2	63	68	77	56	13.1	17.4	89	98	8	4	SW 8	W 7	0.0
15	47.9	47.7	51	48	70	48	7.0	7.6	75	89	10	8	NE 12	NE 2	.
16	47.6	45.7	54	55	67	48	7.6	7.0	73	65	1	0	NE 9	S 8	.
17	45.7	44.7	63	58	75	50	8.8	6.8	59	56	0	1	N 3	S 9	.
18	45.6	44.3	64	59	77	52	7.0	6.5	47	51	3	1	SW 5	S 6	.
19	45.8	47.7	63	58	73	54	8.8	10.2	60	82	0	1	S 3	S 6	.
20	50.3	49.4	63	59	74	53	10.6	9.1	71	71	6	9	SW 4	S 8	.
21	47.3	45.9	63	66	76	56	12.7	15.1	88	95	10	3	SW 8	S 5	2.3
22	43.8	41.2	62	68	79	62	14.1	17.4	100	99	10●	8	S 5	SE 5	25.1
23	38.9	37.5	69	63	83	63	17.4	13.6	96	94	2	10	S 2	NE 7	0.0
24	39.6	42.3	64	65	76	58	15.1	14.6	100	91	8	9	NW 4	E 3	.
25	46.1	45.9	67	70	79	58	13.6	16.2	84	85	8	1	N 4	S 10	0.0
26	48.3	48.3	78	73	87	66	16.2	16.8	68	79	0	3	N 4	SW 8	.
27	46.8	43.5	78	77	89	69	17.4	18.0	72	78	2	2	SW 4	SW 9	.
28	42.9	41.7	79	76	94	69	19.9	20.6	80	89	0	3	W 6	SW 7	.
29	41.8	39.6	77	74	88	69	19.2	19.2	84	91	0	2	SW 7	SW 7	.
30	41.4	41.6	78	80	91	68	19.2	14.6	82	57	1	0	W 5	W 8	.
Means	44.5	43.8	64.3	63.7	77.0	56.3	11.9	11.7	76.3	75.6	4.1	4.4	5.9	7.1	41.9
'86-'01	44.6	44.0	62.6	62.3	73.9	55.0	11.6	11.5	79.3	79.0	5.8	5.7	5.3	6.2	69.8
Depart.	−0.1	−0.2	+1.7	+1.4	+3.1	+1.3	+0.3	+0.2	−3.0	−3.4	−1.7	−1.3	+0.6	+0.9	−27.9

REMARKS.

1, ≡ A — P; ●° 2.5? A — 9.5 A, 7.2 P —. **2,** ●° — 6.5? A; ∞ A. **3,** ≡ A. **4,** ∞ A; ● 2.6 P — 2.9 P, 3.3 P, 3.8 P — 3.9 P; ⚡² in SW 5.2 P. **5,** ∞ A. **6,** ∞² A; ∞ P. **7,** ≡ A; ∞² A — P; ● 5.9 P —. **8,** ● — 6.4? A. **9,** ●° 5.9 P; ● 7.2 P — 8.5 P. **11,** ∞ A. **12,** ∞² A — P. **13,** ∞² A — P. **14,** ∞² A — P; ●° 2.7 P — 3.1 P, 3.7 P, 4.2 P. **15,** ∞ in W A — P. **16,** ∞ A. **20,** ⊕° 8.8 A — 9.2 A; ∞ A — P. **21,** ⌐K 8.1 A — 8.5 A; ● 8.4 A — 8.6 A. **22,** ≡ A; ●² 7.1 A — 11.1 A; ⌐K 7.9 A — 10.1 A. **23,** ⌐K 1.2? A — 5.0? A; ≡ A — P; ∞ A — P; T 3.5 P — 5.2 P; ●° 4.4 P — 5.2 P. **24,** ≡ A; ∞ A — P; ●° 10.7 P —. **25,** ●° — 2.0? A; ∞ A — P. **26,** ∞² A — P. **27,** ∞² A — P. **28,** ∞² A — P. **29,** ∞² A — P; ⚡ in NW 8.3 P — 9.7 P. **30,** ∞ A.

JULY, 1901.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	45.0	45.1	78	81	91	71	15.1	19.9	62	73	1	8	W 5	SW 5	.
2	46.4	42.6	79	72	92	72	14.6	17.4	58	85	0	9	S 4	W 8	2.5
3	41.7	41.0	80	77	93	70	19.2	12.2	74	54	4	1	W 7	E 6	.
4	43.0	40.6	71	68	77	64	11.0	13.1	58	77	2	6	E 4	S 7	.
5	40.7	41.9	64	63	71	62	14.6	14.1	98	96	10	10	NE 3	SE 5	6.6
6	41.7	40.7	64	62	69	61	14.6	14.1	97	100	10	10	SE 8	NE 5	4.6
7	41.2	39.9	60	70	77	59	13.1	18.6	100	99	10	9●	SE 2	SW 9	0.0
8	43.8	47.4	70	70	81	63	12.7	15.7	68	82	3	9	NW 5	S 5	0.3
9	49.4	49.5	63	60	70	60	14.6	13.1	100	100	10●	10●°	NE 3	NE 4	1.0
10	48.8	44.8	63	66	80	60	14.6	15.1	100	91	10	0	W 2	SW 8	0.3
11	43.1	43.8	70	63	85	63	15.1	14.6	82	100	6	10●²	SW 5	NE 8	21.6
12	48.3	51.1	61	61	69	61	13.6	10.6	100	78	10	1	E 9	NE 7	28.5
13	52.3	50.6	67	67	77	55	13.1	15.7	78	93	2	3	NE 4	SW 6	.
14	50.2	46.9	72	75	86	61	16.2	19.9	83	89	0	0	W 4	W 9	.
15	46.1	42.7	77	77	87	70	18.6	20.6	80	87	7	2	W 8	W 8	.
16	42.4	40.0	80	75	90	71	21.3	19.9	84	93	0	4	W 5	SW 7	.
17	39.7	39.9	74	71	87	69	20.6	19.2	94	100	10	8	SW 8	N 5	21.3
18	40.8	41.4	74	68	86	68	20.6	15.7	95	89	10	10●	SW 3	SE 8	0.0
19	41.6	42.6	72	72	80	65	18.0	17.4	91	88	3	5	NW 3	SW 1	7.9
20	45.2	44.1	69	67	80	61	10.2	14.1	57	84	1	5	E 4	S 7	.
21	43.4	40.5	72	78	87	63	15.1	18.6	78	77	8	4	SW 7	SW 9	.
22	40.4	41.1	78	78	90	71	17.4	18.6	71	76	3	5	SW 7	SW 5	0.3
23	43.1	44.1	73	73	80	67	14.1	14.1	67	70	1	9	NE 6	S 4	.
24	43.9	41.1	74	76	86	67	14.6	16.2	68	73	0	6	W 2	SW 7	.
25	45.6	45.2	53	57	76	51	10.2	8.2	100	69	10●	4	E 3	S 3	22.6
26	46.1	47.9	59	59	68	56	12.2	9.8	97	77	10	0	NE 4	SE 4	0.0
27	49.9	48.8	68	62	76	58	11.4	10.2	65	72	3	3	SW 1	S 8	.
28	46.9	41.2	63	65	69	57	12.7	14.6	87	91	8	10	S 8	S 9	0.0
29	42.0	44.1	57	58	67	57	11.8	12.2	100	100	10	10●°	N 6	NE 4	38.9
30	40.0	39.7	62	78	85	58	14.1	18.0	100	74	10	6	S 10	W 7	0.0
31	39.6	39.7	77	72	85	68	22.0	15.7	92	78	7	10	SW 3	W 5	.
Means	44.3	43.5	69.2	69.1	80.5	62.5	15.1	15.4	83.4	84.5	5.8	6.0	4.9	6.2	156.4
'86-'01	44.8	44.3	67.7	67.0	78.3	60.3	13.9	13.8	80.1	80.8	5.2	5.2	5.1	6.1	100.0
Depart.	−0.5	−0.8	+1.5	+2.1	+2.2	+2.2	+1.2	+1.6	+3.3	+3.7	+0.6	+0.8	−0.2	+0.1	+56.4

REMARKS.

2, ∞² A—P; T in NW 1.8 P—2.3 P; ↯ 5.2 P—6.7 P; ◍ 5.6 P—6.4 P. **3,** ∞² A—P; T in S 4.0 P—4.7 P. **5,** ⚡² 1.0 A; ◍ 1.2? A—2.3? A; ◯° 10.2 A; ◍ 11.5? P—. **6,** ◍ —5.2? A, 9.3 A—9.7 A; ↯° 9.2 A—9.4 A; ◍° 10.4 A; ≡ P. **7,** ≡ A; ≡ ◍ ? A; ∞² A—P; ◍ 7.7 P—9.2 P. **9,** ◍ 1.5? A—2.2? A; ◍° 7.9 A—8.2 A; ≡ A—P; ◍ 10.0 A—0.3 P, 6.8? P—8.8 P. **10,** ≡ A; ∞² A—P. **11,** ∞² A—P; ◍° 2.2 P—2.3 P; ≡ P; ↯ 3.4 P—5.5 P; ◍² 3.8 P—. **12,** ◍² —2.7? A; ≡ A. **13,** ∞ in W A—P. **15,** ∞ A—P. **16,** ∞² A—P. **17,** T 11.2 A in W, 0.2 P in NW; ↯ 1.1 P—2.7 P; ◍² 1.4 P—3.2 P; ≡ P. **18,** ∞² A—P; ↯ 7.9 P—8.7 P; ◍² 8.0 P—8.2 P; ↯ in N 9.2 P—10.5 P—. **19,** ∞² A—P; ↯ in SW 2.7 P—3.2 P; ◍° 4.0 P—4.9 P. **21,** ∞ A—P; ↯ in NW 8.2 P—10.7 P. **22,** ↯ 0.5 A—1.5 A; ◍ 0.8? A—1.3? A; ⚡² in SW 8.1 P—10.2 P—. **23,** ∞² A—P. **24,** ∞² A. **25,** ◍² 1.3? A—8.3 A; ∞² A—P. **26,** ◍ 6.3 A—7.3 A; ∞² A—P. **27,** ∞² A—P. **28,** ◍ 9.3 A—9.6 A; ◍° 5.1 P—7.3 P. **29,** ● 0.3? A—6.6 A; ↯ 1.0? A—2.0? A; ≡ A—P; ●° 5.6 P—. **30,** ◍° —? A; ≡ A. **31,** ∞ A; ◍° 6.5 P—6.7 P.

AUGUST, 1901.

Date.	Atmospheric Pressure, in mm. 700+ A.M. 8.00	P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure, in mm. A.M. 8.00	P.M. 8.00	Relative Humidity, in per cent. A.M. 8.00	P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00	P.M. 8.00	Precipitation, in mm. P.M. 8.00
1	40.3	41.7	68	68	80	61	13.1	13.1	75	76	2	4	NW 5	NW 6	0.0
2	44.0	43.2	65	63	77	58	11.4	12.7	72	88	2	8	NW 3	S 6	.
3	42.0	42.1	65	70	79	60	14.6	18.0	95	97	10●°	8	SW 9	S 6	0.0
4	42.7	43.7	68	63	74	63	17.4	12.2	100	85	10	2	NE 3	NW 3	5.6
5	47.2	49.5	66	64	75	59	10.6	10.6	66	71	0	8	N 7	SE 5	.
6	52.3	51.3	66	63	71	59	12.2	13.6	76	96	8	9	NE 4	E 7	0.0
7	45.6	44.2	70	68	74	61	18.6	17.4	100	98	10●	8	S 12	S 9	17.8
8	45.5	42.8	67	70	82	61	13.1	15.1	79	84	1	4	W 3	S 8	0.0
9	46.2	47.3	66	64	79	61	10.6	11.8	65	79	2	4	NW 8	S 5	.
10	45.1	41.9	67	71	81	60	16.8	17.4	99	91	10	7	S 7	S 10	.
11	43.4	45.8	72	74	85	69	16.8	13.1	97	62	5	4	W 4	W 4	1.0
12	47.0	47.0	63	60	74	60	14.6	13.1	100	100	10	10●°	N 5	N 4	0.5
13	48.0	48.4	65	64	76	59	14.6	14.6	94	93	5	2	NE 2	S 6	0.0
14	48.3	46.5	63	64	76	60	14.6	14.1	100	96	10	6	E 1	S 7	.
15	46.1	42.3	64	69	72	60	15.1	18.0	100	100	10	10	S 3	S 8	0.0
16	43.6	44.7	71	72	83	66	15.1	15.1	78	75	7	4	W 6	W 7	0.0
17	45.7	43.5	69	75	85	61	12.7	21.3	73	95	7	10●°	W 5	SW 6	0.0
18	44.8	47.3	67	65	75	64	13.6	10.2	82	64	10	8	NE 9	S 5	14.7
19	50.0	49.6	69	58	74	57	12.2	11.8	69	96	5	10●	E 3	E 5	0.8
20	48.2	47.0	61	66	79	57	13.6	16.2	100	100	10	10	NW 2	E 4	5.8
21	47.8	48.4	66	66	75	64	16.2	14.6	100	91	10	0	N 3	E 4	0.0
22	49.8	50.5	63	65	78	62	14.6	14.1	100	92	10	4	SE 3	SE 6	.
23	51.0	49.1	63	68	79	61	14.6	17.4	100	98	10	9	S 4	S 7	.
24	48.0	46.5	71	71	84	67	19.2	19.2	100	100	7	10●	SW 5	S 4	1.5
25	45.6	45.9	67	68	74	66	19.2	16.2	100	93	10	9	NW 5	SE 3	25.9
26	46.5	46.3	66	65	73	65	16.2	13.6	100	86	10	0	NE 2	SE 2	.
27	48.0	49.1	70	65	78	61	14.6	8.8	79	56	1	3	N 3	E 5	.
28	50.7	50.7	67	63	76	58	11.4	11.0	69	77	3	0	NE 6	SE 5	.
29	49.8	47.3	69	64	79	61	10.2	11.0	56	72	0	0	SW 4	S 8	.
30	45.9	44.7	68	63	79	59	11.8	13.6	69	92	2	2	S 5	S 7	.
31	45.7	45.5	64	63	75	59	15.1	14.6	100	100	0	10	S 3	E 7	.
Means	46.6	46.2	66.6	66.2	77.5	61.3	14.3	14.3	86.9	87.2	6.4	5.7	4.6	5.8	73.6
'86-'01	45.0	44.7	65.2	65.3	75.9	59.2	13.7	13.6	83.8	82.7	5.6	4.7	5.1	5.8	101.5
Depart.	+1.6	+1.5	+1.4	+0.9	+1.6	+2.1	+0.6	+0.7	+3.1	+4.5	+0.8	+1.0	−0.5	0.0	−27.9

REMARKS.

1, ●° 6.4 A — 6.5 A. **3,** ●° 5.0? A — 8.9 A, 9.4 A — 9.9 A; ∞² A — P. **4,** ≡ A; ● 1.2 P — 6.4 P. **6,** ● 2.0 P — 2.3 P; ●° 5.7 P — 5.8 P; ● 11.9? P —. **7,** ● — 6.0? A, 6.7 A — 6.9 A, 7.0 A — 8.4 A, 9.2 A — 2.2 P, 2.9 P — 3.7 P; ≡ A; ⌒ in E 6.7 P — 6.8 P. **8,** ●° 7.1 P — 7.2 P; ⚡ in NW 8.6 P — 9.7 P —. **9,** ⊔° 0.7 A — 2.5 A. **10,** ∞² A; T in NW 6.3 P. **11,** ● 1.7? A — 6.0? A; T? 6.1 A; ∞² A. **12,** ≡ A — P; ∞² A; ● 5.4 P — 10.5? P. **13,** ∞² A — P. **14,** ≡ A; ∞² A — P; ⊕° 1.0 P. **15,** ≡ A — P; ∞² A — P; ●° 0.8 P — 4.6 P; ● ≡ ? P — P. **16,** ∞² A — P; ⊕° 1.5 P — 2.2 P. **17,** ∞² A — P; ⛈ 10.9 P —; ●° 4.6 P — 5.5? P, 8.0 P —. **18,** ● — 3.7 A; ⛈ — 2.0? A; ≡ A; ⊕² 8.5 A — 12 M. **19,** ∞² A; ● 5.9 P —. **20,** ● — 6.2? A, 4.9 P — 5.2 P; ≡ A — P; ∞² P; T in SE 4.9 P — 5.0 P, in W 6.1 P. **21,** ≡ A; ≡ ●? A —? A; ∞² P; ⚡ in W 8.0 P. **22,** ≡ A. **23,** ≡ A; ∞² A — P. **24,** ⚡ in SW 7.8 P —; ⛈ 9.2 P —; ⛈² 11.0 P —; ● 6.9 P —. **25,** ● — 1.0? A; ⛈ — 1.5 A; ● 10.3 A — 10.8 A. **26,** ≡ A. **28,** ⊕² 1.7 P — 4.0 P. **31,** ≡ P.

SEPTEMBER, 1901.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	44.6	44.4	64	61	65	61	15.1	13.6	100	100	10	10●°	E 6	NE 7	9.4
2	45.0	45.7	63	64	68	56	13.1	12.7	92	85	7	9	NE 4	NW 3	0.3
3	47.2	47.7	68	60	74	60	13.1	13.1	79	97	3	10	NE 5	NE 4	.
4	47.8	46.2	59	65	80	58	12.7	15.7	100	99	10	0	SW 3	S 5	.
5	47.3	48.0	72	75	86	65	14.1	14.1	71	77	0	0	NW 4	S 3	.
6	48.8	47.5	76	73	84	68	16.2	16.2	72	77	0	1	NE 3	S 5	.
7	45.3	41.6	72	71	85	68	15.1	17.4	77	89	0	0	N 4	S 6	.
8	42.5	44.1	57	55	72	55	9.5	6.3	81	58	0	0	N 8	NW 9	.
9	46.9	46.5	53	59	69	46	6.8	7.6	67	60	0	2	NW 6	W 6	.
10	47.6	46.0	57	60	73	53	11.0	11.0	62	84	5	10	NW 5	S 5	.
11	46.9	38.3	63	65	75	60	14.6	14.6	100	96	10●°	7	S 7	S 7	22.3
12	38.2	34.6	63	67	73	58	13.1	16.8	96	100	7	10	W 4	S 7	1.5
13	34.3	37.3	68	65	77	65	16.8	14.6	97	92	7	9●°	SW 4	SW 4	4.6
14	43.0	45.1	62	65	77	58	11.4	13.6	82	87	0	0	NW 7	SW 4	0.0
15	45.0	41.0	63	70	75	59	14.6	18.6	100	100	10	10	S 6	S 9	0.0
16	43.1	43.3	67	68	80	64	12.2	14.1	73	79	0	0	W 6	SW 9	18.0
17	42.8	40.9	65	60	73	60	14.6	11.4	95	85	10	10	SE 3	NW 10	9.4
18	44.3	44.9	56	50	60	50	10.2	7.9	87	87	10	10●	NW 4	E 2	3.8
19	46.8	51.2	51	53	65	49	9.5	6.5	100	66	9	7	NW 4	N 8	10.4
20	51.3	45.7	49	49	56	44	7.9	8.8	90	100	10	10●°	NE 7	NE 8	4.8
21	47.5	50.1	47	56	65	41	7.0	7.3	85	64	0	2	SW 5	NW 3	0.0
22	52.9	50.5	58	55	69	51	8.5	9.8	69	87	0	0	SE 4	S 9	.
23	50.3	48.3	59	59	75	52	11.8	12.2	94	96	0	0	SW 7	SW 9	.
24	48.4	48.4	58	63	79	55	11.8	9.1	97	62	0	10	SW 7	N 14	.
25	54.6	55.4	49	49	63	42	4.7	5.2	54	57	0	0	N 9	NW 5	.
26	57.0	56.1	47	47	61	39	8.8	7.0	75	84	0	2	N 4	S 7	.
27	56.3	54.7	58	52	68	47	9.8	7.3	80	75	0	0	SW 6	S 8	.
28	54.0	50.8	52	60	74	50	9.8	11.8	100	88	10	5	SW 7	S 9	.
29	45.8	41.5	65	67	69	59	15.7	16.8	100	100	10●²	10●°	S 12	S 9	20.1
30	40.8	44.0	64	61	75	61	14.1	10.6	92	77	9	0	W 8	W 8	16.0
Means	46.9	46.0	60.0	60.8	72.2	55.2	11.8	11.7	85.6	83.6	4.6	4.8	5.6	6.7	120.6
'86-'01	47.0	46.5	58.5	58.9	69.5	52.7	10.9	11.0	83.9	83.2	5.1	4.5	6.0	6.7	114.6
Depart.	−0.1	−0.5	+1.5	+1.9	+2.7	+2.5	+0.9	+0.7	+1.7	+0.4	−0.5	+0.3	−0.4	0.0	+6.0

REMARKS.

1, ◍ 0.2 A — 5.5 A, 9.6 A — 8.5 P; ≡ A — P. **2,** ∞² A — P. **3,** ⌈K in W 12 M; T in W 2.8 P — 3.2 P. **4,** ≡ A; ∞² A — P. **5,** ∞² A — P. **6,** ∞² A — P. **7,** ∞² A — P. **8,** ∞² A; Dense smoke — 7 A — 10 A. **9,** ⊕° 4.0 P — 5.0 P. **10,** ⊕° 7.3 A — 8.5 A; ∞² A — P. **11,** ≡ A; ● 3.0? A — 10.5 A, 5.8 P — 7.9 P; ⌈K 5.4 P — 10.0 P. **12,** ◍°? A — ? A, 11.5 A; ◍ 1.5 P — 5.6 P, 6.3 P — 6.4 P; ≡ P. **13,** ∞² A; ◌² 11.0 A — 11.3 A; T in W 12 M; ∞² P; ◍ 0.4 P — 0.7 P; ◍° 0.8 P — 1.5 P, 6.4 P — 8.1 P. **14,** Dense smoke A — P. **15,** ≡ A; ∞² A; ◍ 8.7 A — 8.9 A, 9.0 P — 11.0? P; ⊕² 9.5 A — 11.2 A; ⌈K² 7.2 P — 9.5 P, ≡ P. **16,** ⊕ 3.0 P — 5.0 P. **17,** ∞² A — P; ◍ 10.0 A, 10.9 A — 0.7? P, 4.2 P — 5.5 P; ⌈K 5.0 P. **18,** ◍ 10.1 A —. **19,** ◍ — 5.1 A. **20,** ◍° 4.5 P — 8.5? P. **24,** ∞² A — P. **26,** ∞² A; ⊔ in lowlands. **27,** ∞ A — P. **28,** ≡ A; ⊕° 1.2 P — 3.0 P; Ʊ 7.7 P — 11.9 P. **29,** ≡ A — P; ◍ 3.4? A — 0.8 P, 1.9 P —. **30,** ◍² — 2.0? A; ⊕° 7.2 A — 9.0 A.

OCTOBER, 1901.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	49.1	46.4	52	52	67	47	7.9	9.5	83	98	1	2	N 4	S 8	.
2	41.6	34.8	58	63	69	51	12.2	13.6	100	95	10	10	S 8	S 7	.
3	34.9	37.8	49	51	65	49	7.0	6.0	82	64	9	4	NW 7	NW 7	27.7
4	41.0	45.6	45	48	58	39	5.8	5.6	77	65	1	0	NW 7	W 5	.
5	47.8	46.7	44	43	59	39	5.8	4.4	80	62	0	0	NW 7	W 8	.
6	43.3	50.2	43	42	49	39	6.3	5.2	87	79	5	0	W 9	NW 10	4.1
7	55.7	55.3	42	47	58	35	5.4	5.4	80	67	0	0	NW 5	SW 5	.
8	54.4	52.5	46	51	67	41	5.8	7.6	74	80	1	5	SW 4	S 8	.
9	51.5	50.3	53	55	69	48	8.5	10.6	85	99	8	8	SW 7	S 8	.
10	52.3	52.1	56	59	71	53	11.4	11.8	100	92	10	7	SW 4	S 9	.
11	52.0	49.7	59	57	71	55	11.8	11.4	95	97	4	0	N 2	SE 6	.
12	48.7	47.3	52	54	65	51	9.8	10.6	100	100	10	10	E 4	SE 5	.
13	46.2	43.1	54	64	65	52	10.6	14.1	100	96	10	10	S 7	S 11	0.5
14	42.5	40.9	59	53	67	53	12.7	10.2	100	100	10•	10•°	N 4	NE 7	57.7
15	44.2	47.6	49	51	62	45	7.3	6.5	82	69	0	0	NW 9	W 8	4.3
16	48.3	45.1	51	52	66	48	5.8	8.2	61	84	0	0	W 5	S 8	.
17	41.2	37.0	54	48	66	48	9.1	7.0	88	84	0	7	S 7	NW 8	1.0
18	40.5	46.9	39	38	49	38	4.4	3.5	73	61	6	0	W 8	W 8	0.0
19	44.3	42.9	46	53	63	35	4.6	6.3	59	61	8	4	SW 13	W 15	0.0
20	54.4	52.9	37	41	54	33	3.1	4.9	61	79	1	1	NW 6	SW 6	.
21	52.4	52.5	37	45	55	33	3.6	5.4	70	72	6	0	NW 4	NW 3	.
22	46.8	44.3	49	54	65	41	7.3	5.8	84	59	4	6	SW 11	W 8	.
23	38.8	31.3	53	65	73	47	4.4	7.9	45	52	7	6	SW 10	W 11	.
24	38.0	43.1	45	38	65	38	4.2	3.8	57	67	5	5	NW 11	NW 11	0.0
25	48.3	49.2	33	38	45	31	2.3	2.7	53	51	5	0	NW 8	W 5	.
26	49.5	47.5	37	48	62	33	3.1	5.8	61	68	0	3	SW 8	SW 10	.
27	46.1	50.0	49	50	63	46	6.8	5.2	78	57	3	10	SW 9	NE 7	.
28	55.9	59.0	40	42	50	35	3.8	4.2	64	65	0	0	N 6	E 6	.
29	60.7	58.7	42	41	53	36	4.9	5.4	74	85	0	7	NE 4	SE 6	.
30	57.0	52.8	44	47	62	39	6.5	7.6	90	94	0	0	SW 3	SW 8	.
31	52.1	49.0	47	50	67	45	8.2	8.5	100	95	0	0	SW 7	SW 8	.
Means	47.6	47.1	47.2	50.0	61.9	42.7	6.8	7.2	78.8	77.3	3.8	3.7	6.7	7.7	95.3
'86-'01	46.0	45.5	46.9	48.3	57.6	41.8	7.3	7.3	81.7	78.2	5.4	4.8	6.9	7.3	118.1
Depart.	+1.6	+1.6	+0.3	+1.7	+4.3	+0.9	−0.5	−0.1	−2.9	−0.9	−1.6	−1.1	−0.2	+0.4	−22.8

REMARKS.

1, ⊕° 4.2 P — 4.7 P. 2, ≡ A; ⚡ in S and SW 7.4 P —; ◍ 10.2? P —. 3, ◍ — 8.4 A, 10.0 A — 10.2 A; ⊕² 1.0 P — 4.5 P. 6, ≡ in lowlands A; ◍ 3.1? A — 6.3? A, 10.5 A — 0.7 P; ▲? 0.2 P; ◍ 4.1 P — 4.6 P; ⌒² 3.2 P — 4.1 P. 7, ⊔ on hill near base A. 8, ≡° in lowlands A. 9, ∞ A — P. 10, ≡ A. 11, ≡ A; ≡ in lowlands A; ∞² A — P in W. 12, ≡ A — P; ∞² A — P. 13, ≡ A; ◍ 11.9 A — 5.6 P; ⌒ in NNE 2.0 P — 2.1 P. 14, ≡ A — P; ◍ 2.6? A — 5.2 P, 6.1? P —. 15, ◍ — 4.0? A. 16, ≡ in lowlands A; ∞² A. 17, ◍ 2.0 P — 4.1 P; ◍° 5.8 P — 7.8 P. 18, ◍° 7.4 A — 7.6 A. 19, ◍ 2.6 P — 2.9 P. 22, ∞² A — P; ⋃² 7.8 P — 8.2 P —. 23, ∞ A — P; ⋃² 7.5 P — 7.9 P. 24, ◍° 1.2 P. 26, ∞² A — P. 27, ∞² A. 28, ∞² A; ⋃° 7.7 P — 8.1 P; ≡° in lowlands P. 29, ≡° in lowlands A; Dense smoke in lowlands A. 30, ≡² in lowlands A; ∞² A; ∞ P. 31, ≡ A; ∞² A — P.

NOVEMBER, 1901.

Date.	Atmospheric Pressure, in mm. 700+ A.M. 8.00	P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure, in mm. A.M. 8.00	P.M. 8.00	Relative Humidity, in per cent. A.M. 8.00	P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00	P.M. 8.00	Precipitation, in mm. P.M. 8.00
1	46.6	46.0	54	51	67	45	10.2	9.1	94	97	3	10	SW 9	W 4	1.5
2	48.5	50.6	45	40	55	40	5.6	4.9	75	80	0	0	NW 7	N 8	.
3	51.1	48.0	38	40	49	34	4.4	4.9	75	81	0	0	N 7	N 6	.
4	45.9	45.1	37	39	45	35	4.9	5.6	89	92	10	1	N 5	NE 5	.
5	45.6	46.3	34	41	49	29	4.4	5.4	89	83	5	2	N 7	E 4	.
6	45.5	44.9	35	37	47	34	3.8	3.3	76	63	8	7	N 6	NW 11	.
7	46.6	44.2	28	37	45	27	2.9	3.5	78	68	0	1	NW 6	SE 4	.
8	43.2	45.7	38	43	49	35	4.0	4.6	70	67	10	10	W 6	W 3	.
9	46.6	43.7	35	40	52	35	4.4	4.6	85	73	5	4	W 6	W 9	0.0
10	47.3	51.6	26	25	40	25	1.6	1.5	52	49	2	0	NW 17	NW 13	0.0
11	51.6	44.5	24	32	38	20	1.5	4.4	50	96	10	10●°	NW 9	S 2	0.3
12	36.4	28.2	36	32	42	31	5.4	4.6	100	100	10●	10●	E 4	NW 9	6.9
13	27.3	27.3	32	27	37	27	2.6	3.0	63	85	4	10✱°	W 14	W 13	1.3
14	24.9	28.8	29	32	32	25	2.6	3.0	69	70	10	8	W 11	SW 10	0.8
15	32.0	35.3	30	31	38	28	3.3	2.6	84	63	6	0	SW 8	SW 8	0.0
16	37.0	40.8	30	37	42	28	3.3	3.1	83	60	2	5	SW 8	W 6	.
17	40.7	41.0	34	33	42	31	3.1	2.7	66	63	7	10	W 4	NW 10	.
18	44.0	43.7	30	37	39	27	3.1	3.6	80	70	7	10✱°	NW 4	SW 2	0.0
19	42.1	44.4	30	30	37	29	4.2	4.2	100	100	10✱	10✱°	NW 4	NW 10	4.3
20	48.4	49.3	24	29	35	22	2.6	2.6	84	66	0	0	NW 8	NW 6	0.0
21	50.1	50.5	24	35	39	20	2.4	2.5	77	51	0	0	NW 11	NW 4	.
22	50.8	48.5	32	34	45	29	2.9	3.6	67	75	1	2	S 3	SW 7	.
23	50.3	50.9	32	33	35	30	3.5	3.6	78	79	10	10	N 7	NE 9	0.0
24	41.8	29.9	39	43	43	33	5.4	7.0	90	100	10●	10●²	NE 15	NE 16	44.7
25	26.1	27.9	32	33	43	32	4.6	3.8	100	80	10●	8	N 12	NW 12	20.1
26	31.4	36.1	26	23	33	23	3.3	1.6	96	57	10✱	10	W 13	NW 13	1.0
27	38.9	43.3	18	18	26	18	1.3	1.3	61	56	1	0	W 13	W 11	.
28	45.5	46.5	11	14	21	10	1.1	1.1	67	62	4	0	NW 10	NW 9	.
29	44.5	40.0	7	23	23	6	1.0	2.2	79	73	4	9	W 5	S 2	.
30	41.2	45.5	18	23	30	16	2.1	1.7	86	58	6	0	NW 6	NW 6	0.0
Means	42.4	42.3	30.3	33.1	40.6	27.5	3.5	3.6	78.8	73.9	5.5	5.2	8.2	7.7	80.9
'86-'01	45.5	45.2	36.5	38.6	46.9	31.7	4.6	4.8	80.0	75.3	6.0	5.3	7.6	7.6	115.0
Depart.	−3.1	−2.9	−6.2	−5.5	−6.3	−4.2	−1.1	−1.2	−1.2	−1.4	−0.5	−0.1	+0.6	+0.1	−34.1

REMARKS.

1, ∞² A; ∞ P; ●° 5.1 P — 6.4 P, 7.0? P — 7.8 P. **4,** ∞² A; ≡ in lowlands P. **5,** ≡ in lowlands A; ⊔² A; ∞² A — P. **6,** ∞² A — P. **7,** ∞ A — P. **8,** ∞² A — P. **9,** ⊕ 8.8 A — 9.7 A; ∞² A — P; ● 4.3 P — 5.2? P. **10,** ✱ 3.6? A — 4.0? A. **11,** ∞ P; ✱ 3.9 P — 5.3 P; ✱ △ 5.3 P — 7.9 P; ●° 7.9 P —. **12,** ● — 5.5 P; ≡ A — P; ● 6.5? P —. **13,** ● — 0.8? A; ✱° 7.5 A, 9.3 A —. **14,** ✱ — 1.0? A, 8.7 A — 5.1? P. **15,** ✱° 2.1 P — 2.2 P; ✱ 2.9 P — 3.2 P. **16,** ∞ A. **18,** ✱° 5.6 P —. **19,** ✱ — 10.2 A, 11.3 A — 8.7 P; ≡ A. **21,** ⊔ A; ∞ A. **22,** ≡° in lowlands A; ∞ A — P; Ʊ 5.0 P — 5.5 P. **23,** ∞² A; ✱ 9.0 A — 11.1 A. **24,** ≡ A — P; ● 7.6 A —. **25,** ● — 8.6 A; ✱ 8.6 A — 9.2? A; ● 9.2? A — 3.2 P; ≡ A. **26,** ✱ 3.2? A — 10.5 A; ⊠. **29,** ∞² A; ∞ P; ✱° 8.2 P.

DECEMBER, 1901.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	45.1	43.1	23	39	46	19	2.3	5.4	82	90	4	0	SW 10	SW 10	.
2	41.4	40.9	39	46	56	37	5.8	5.6	96	71	6	6	S 11	SW 6	.
3	44.2	35.5	31	28	46	28	4.2	3.8	100	100	10●	10△²	N 6	N 13	22.9
4	35.3	44.0	17	15	28	15	2.0	1.3	85	68	8	0	NW 9	W 10	17.0
5	46.9	50.1	9	13	20	7	1.2	1.0	80	55	0	0	W 7	NW 9	.
6	53.5	56.0	5	17	22	5	0.8	1.1	67	53	1	0	NW 7	NW 8	.
7	56.4	54.6	13	21	22	12	1.5	2.1	82	77	9	9	N 8	N 4	0.0
8	53.0	51.2	24	31	34	19	2.6	3.8	83	92	8	10	S 2	SE 6	0.0
9	44.1	43.9	38	42	43	30	5.8	5.2	100	76	4	9	S 12	SW 6	0.0
10	34.8	43.0	50	37	58	36	9.1	2.7	100	53	10●	0	S 10	W 10	23.9
11	49.3	52.5	31	36	40	30	2.9	3.1	71	63	0	2	W 7	SW 4	.
12	54.4	55.2	34	36	41	32	4.2	4.4	84	83	8	3	SW 5	E 5	.
13	53.5	52.8	42	52	52	36	6.8	9.8	100	100	10	10●°	SE 7	S 14	2.8
14	50.8	44.0	53	58	62	51	9.1	11.0	92	87	5	8	S 11	S 19	0.5
15	36.3	36.7	57	27	60	27	11.8	2.3	100	66	10●	0	S 17	NW 14	37.6
16	41.5	45.1	8	10	27	8	0.5	1.5	38	44	0	7	NW 16	NW 10	.
17	45.3	41.7	7	12	12	7	0.6	1.5	48	92	10	10*°	N 7	N 10	2.3
18	43.0	46.4	10	18	22	9	1.4	1.8	90	80	10*	8	N 9	NW 5	3.6
19	49.0	49.5	10	17	21	10	1.3	2.2	80	96	6	9	N 7	W 5	0.0
20	51.3	50.2	10	16	20	10	1.5	1.4	93	69	7	2	NW 5	N 9	.
21	49.5	50.7	11	11	19	11	1.2	0.8	75	49	3	0	N 7	NW 8	.
22	51.2	45.4	10	20	24	5	0.8	1.8	51	71	0	9	NW 2	S 10	.
23	41.1	40.6	28	35	35	20	2.4	4.4	66	87	6	10	SW 9	SE 5	0.0
24	32.0	38.1	33	33	41	32	4.7	3.8	100	81	10●²	0	NW 7	W 10	17.3
25	40.3	42.7	33	32	37	31	4.0	4.0	84	93	10	3	S 5	NW 10	0.5
26	49.9	48.2	25	32	41	25	2.4	3.3	76	75	1	10	W 6	SE 6	.
27	36.4	47.1	31	31	36	31	4.4	3.6	100	80	10●°	0	N 8	NW 7	18.0
28	52.7	50.5	27	33	38	27	2.9	3.8	82	81	4	8	NE 3	SE 9	.
29	37.0	31.4	42	55	56	33	6.8	10.6	100	99	10●²	10●	SE 14	SW 12	25.4
30	32.6	34.7	37	34	55	34	5.6	4.9	100	99	10●²	9	N 8	W 5	28.5
31	36.8	35.8	26	30	39	24	2.6	2.9	74	71	0	6	W 8	W 15	0.0
Means	44.8	45.2	26.2	29.6	37.0	22.6	3.7	3.7	83.2	77.5	6.1	5.4	8.1	8.8	200.3
'86-'01	45.3	45.1	26.6	29.4	37.4	22.3	3.2	3.4	76.1	71.1	5.8	5.0	7.9	8.0	94.7
Depart.	−0.5	+0.1	−0.4	+0.2	−0.4	+0.3	+0.5	+0.3	+7.1	+6.4	+0.3	+0.4	+0.2	+0.8	+105.6

REMARKS.

1, ∞² A — P. **2**, ∞² A — P. **3**, ● 2.3? A — 8.7 A; ≡ P; ∽ A — P; ● 11.1 A — 0.7 P; ● △ 0.7 P — 1.1 P; △ ✱ 1.1 P — 1.9 P; ● △ 1.9 P — 4.9 P; △² 4.9 P — 10.0? P; ✱ 10.0? P —; ⊠. **4**, ✱ — 2.7? A; ⊠. **5**, ⊠. **6**, ⊠. **7**, ∞² A — P; ✱° 2.0 P — 3.5 P; ⊠. **8**, ✱° 5.5 P; ● 8.1 P; ⊠. **9**, ●° 10.5 A — 10.8 A; ⊕° 2.8 P — 3.0 P; ● 9.8 P —; ⊠. **10**, ● — 11.5 A, 12 M — 0.2 P; ≡ A. **11**, ∞² A; ∞ P. **12**, ⊕ 7.6 A — 10.5? A; ∞² A — P; ≡ in lowlands P. **13**, ≡ A — P; ● 0.5 P — 1.5 P, 4.7? P — 8.5? P. **14**, ● 3.4 P — 4.0 P; ●° 5.9 P. **15**, ●² 4.8 A — 4.4 P; ≡ P. **17**, ∞ A; ✱° 9.5 A —; ⊠. **18**, ✱ — 0.3 P; ✱° 4.3 P — 4.4 P; ∞² P; ⊠. **19**, ⌴² A; ∞² A — P; ✱° 1.3 P — 5.5? P; ⊕° 1.5 P — 3.0 P; ⊠. **20**, ⌴² A; ⊠. **21**, ⊠. **22**, ⊠. **23**, ∞² A — P; ✱° 6.0 P — 6.5? P; ⊠. **24**, ● 0.3? A — 10.7 A; ≡ A; ⏀ 9.0 P; ⋃ 10.0 P — 11.0 P. **25**, ∞² A — P; ● 11.0 A — 1.5 P; ≡ P; ⌴² 8.0 P —. **26**, ⌴² A; ∞² A — P; ✱ 9.2 P —. **27**, ✱ — 0.8 A; ●° 0.8 A — 9.1 A; ✱ 9.1 A — 2.1 P; ≡ A — P; ⊠. **28**, Dense smoke in lowlands A; ⊠. **29**, ≡ A — P; ● 1.5? A —. **30**, ●² — 4.7 P; ≡ A — P. **31**, ⌴ A; ✱ 7.4 P — 7.8 P.

TABLE II.

SUMMARY FOR 1901.

IN ENGLISH AND METRIC MEASURES.

$\lambda = 71° 6' 53''$ W. $\phi = 42° 12' 44''$ N. H = 640 ft., or 195.1 m.

The correction to reduce to standard gravity of Lat. 45°, —.007 *in.* at 30 *in.*, or —0.18 *mm.* at 762 *mm.*, has not been applied to the barometer readings, which are corrected to 32° F., but are not reduced to sea level.

Month.	Atmospheric Pressure.								Air Temperature.			
	Mean Corrected to 24 Hours.		Maximum.			Minimum.			8 A.M.		8 P.M.	
	Inches.	Mm.	Inches.	Mm.	Date.	Inches.	Mm.	Date.	Fahr.	Cent.	Fahr.	Cent.
									°	°	°	°
January . . .	29.228	742.4	29.99	761.7	3	28.26	717.9	28	20.8	−6.2	25.0	−3.9
February . .	29.024	737.2	29.55	750.7	3	28.53	724.6	14	15.5	−9.2	20.1	−6.6
March	29.181	741.2	29.73	755.0	19	28.57	725.6	27	30.4	−0.9	32.7	−0.4
April	29.291	744.0	29.82	757.5	28	28.60	726.5	7	40.9	4.9	41.5	5.3
May	29.205	741.8	29.53	750.1	25	28.71	729.3	3	51.3	10.7	50.8	10.4
June	29.287	743.9	29.59	751.7	13	28.98	736.1	23	64.3	17.9	63.7	17.6
July	29.280	743.7	29.62	752.4	13	29.08	738.6	31	69.2	20.7	69.1	20.6
August . . .	29.374	746.1	29.64	752.9	6	29.11	739.4	1	66.6	19.2	66.2	19.0
September .	29.374	746.1	29.82	757.4	26	28.87	733.3	13	60.0	15.6	60.8	16.0
October . . .	29.410	747.0	29.98	761.5	29	28.77	730.7	23	47.2	8.4	50.0	10.0
November .	29.213	742.0	29.61	752.0	11	28.50	723.8	25	30.3	−0.9	33.1	0.6
December. .	29.319	744.7	29.79	756.6	7	28.67	728.2	30	26.2	−3.2	29.6	−1.3
Year	29.265	743.3	29.99	761.7	3, I	28.26	717.9	28, I	43.6	6.4	45.2	7.3
1886–1901.	29.312	744.5	30.21	767.3	II, '87	27.90	708.7	II, '95	44.3	6.8	45.7	7.6
Departures.	−.047	−1.2							−0.7	−0.4	−0.5	−0.3

Month.	Vapor Pressure.						Relative Humidity.			Cloudiness.		
	8 A.M.		8 P.M.		Mean.		8 A.M.	8 P.M.	Mean.	8 A.M.	8 P.M.	Mean.
	Inch.	Mm.	Inch.	Mm.	Inch.	Mm.	Per cent.	Per cent.	Per cent.	0—10.	0—10.	0—10.
January . . .	.09	2.4	.10	2.6	.10	2.5	78.2	71.5	72.7	6.0	4.8	5.4
February . .	.06	1.6	.06	1.5	.06	1.5	71.0	55.9	61.5	3.4	3.6	3.5
March	.13	3.3	.14	3.5	.13	3.4	73.2	73.7	71.8	6.0	7.3	6.7
April	.20	5.2	.20	5.2	.20	5.2	82.9	81.4	80.1	8.2	8.1	8.1
May	.30	7.6	.29	7.3	.29	7.4	79.5	78.1	76.7	6.9	6.4	6.6
June	.47	11.9	.46	11.7	.46	11.8	76.3	75.6	73.7	4.1	4.4	4.2
July	.59	15.1	.61	15.4	.60	15.2	83.4	84.5	81.1	5.8	6.0	5.9
August . . .	.56	14.3	.56	14.3	.56	14.3	86.9	87.2	84.0	6.4	5.7	6.1
September .	.46	11.8	.46	11.7	.46	11.7	85.6	83.6	81.5	4.6	4.8	4.7
October . . .	.27	6.8	.28	7.2	.28	7.0	78.8	77.3	76.2	3.8	3.7	3.7
November .	.14	3.5	.14	3.6	.14	3.5	78.8	73.9	73.9	5.5	5.2	5.3
December. .	.15	3.7	.15	3.7	.15	3.7	83.2	77.5	78.3	6.1	5.4	5.7
Year	.29	7.3	.29	7.3	.29	7.3	79.8	76.7	76.0	5.6	5.4	5.5
1886–1901*	.28	7.1	.28	7.1	.28	7.1	77.6	75.4	74.3	5.7	5.2	5.4
Departures.	+.01	+0.2	+.01	+0.2	+.01	+0.2	+2.2	+1.3	+1.7	−0.1	+0.2	+0.1

* 1891–1901 Vapor Pressure and Gales.

FEATURES OF THE MONTH. — Exceptionally cold February and November, being the coldest February, except 1885, and the coldest November since the beginning of observations; a hot summer; a remarkably wet spring, particularly April, this month having the greatest rainfall, the greatest frequency of rain, the greatest mean relative humidity, the greatest mean cloudiness and least sunshine, and the greatest frequency of NE and E winds of any April since observations were begun in 1885; mean pressure below normal from January to July with a lower mean for February than for any month during the past 17 years.

TABLE II.

SUMMARY FOR 1901.

IN ENGLISH AND METRIC MEASURES.

h_t = 6 ft., or 1.8 m., in summer, and 16 ft., or 4.9 m., in winter. h_r = 1 ft., or 0.3 m.

Month.	Air Temperature.															
	Mean Corrected to 24 Hours.		Mean Max.		Mean Min.		Mean of Max. and Min.		Maximum.			Minimum.		
	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Date.	Fahr.	Cent.	Date.
	°	°	°	°	°	°	°	°	°	°		°	°	
January ...	24.6	−4.1	31.5	−0.3	17.1	−8.3	24.3	−4.3	48	8.9	9	−9	−22.8	20
February ..	19.1	−7.2	27.6	−2.4	13.2	−10.4	20.4	−6.4	43	6.1	26	6	−14.4	9
March	32.1	0.1	40.8	4.9	25.7	−3.5	33.2	0.7	56	13.3	21	4	−15.6	7
April	42.3	5.7	47.9	8.8	36.4	2.4	42.1	5.6	78	25.6	29	30	− 1.1	1
May	52.1	11.2	62.0	16.7	44.6	7.0	53.3	11.8	83	28.3	22	34	1.1	2
June	64.9	18.3	77.0	25.0	56.3	13.5	66.7	19.3	94	34.4	28	45	7.2	9
July	70.0	21.1	80.5	26.9	62.5	16.9	71.5	21.9	93	33.9	3	51	10.6	25
August ...	67.6	19.8	77.5	25.3	61.3	16.3	69.4	20.8	85	29.4	17	57	13.9	19
September .	61.7	16.5	72.2	22.3	55.2	12.9	63.7	17.6	86	30.0	5	39	3.9	26
October ...	50.0	10.0	61.9	16.6	42.7	5.9	52.3	11.3	73	22.8	23	31	− 0.6	25
November .	33.0	0.6	40.6	4.8	27.5	−2.5	34.0	1.1	67	19.4	1	6	−14.4	29
December..	29.1	−1.6	37.0	2.8	22.6	−5.2	29.8	−1.2	62	16.7	14	5	−15.0	6
Year......	45.5	7.5	54.7	12.6	38.8	3.7	46.7	8.2	94	34.4	28, VI	− 9	−22.8	20, I
1886–1901.	46.2	7.9	55.3	12.9	38.6	3.7	46.9	8.3	97	36.1	VII,'94	−16	−26.7	II, '96
Departures.	−0.7	−0.4	−0.6	−0.3	+0.2	0.0	−0.2	−0.1						

Month.	Precipitation.					Number of Days with								
	Total Monthly.		Maximum Daily.			●✳ ≥.01 Inch.	●✳ ≥1.0 Mm.	✳ 0.1 ch.	▲	⚡	≡	Clear.	Cloudy.	≥20 Metres
	Inches.	Mm.	Inches.	Mm.	Date.									
January ...	2.05	52.1	.70	17.8	12	9	8	6	0	0	5	7	14	0
February ..	1.04	26.4	.61	15.5	4	3	3	4	0	0	0	9	2	3
March	7.37	187.1	2.11	53.6	11	14	12	5	0	0	8	4	16	2
April	7.31	185.9	1.38	35.1	25	19	17	0	0	0	16	5	24	1
May	5.96	151.3	1.43	36.3	19	15	14	0	0	1	13	3	12	2
June	1.65	41.9	.99	25.1	22	8	5	0	0	3	6	9	6	0
July	6.16	156.4	1.53	38.9	29	13	10	0	0	8	5	3	8	0
August ...	2.90	73.6	1.02	25.9	25	9	7	0	0	2	12	3	12	0
September .	4.75	120.6	.88	22.3	11	12	11	0	0	4	7	14	12	0
October ...	3.75	95.3	2.27	57.7	14	6	5	0	0	0	7	12	5	1
November .	3.18	80.9	1.76	44.7	24	9	7	4	0	0	4	7	13	2
December..	7.89	200.3	1.48	37.6	15	13	11	6	0	0	9	6	12	4
Year......	54.01	1371.8	2.27	57.7	14, X	130	110	25	0	18	92	82	136	15
1886–1901.	47.86	1215.6	5.92	150.4	X, '95	132	106	28	1	20	87	94	131	15
Departures.	+6.15	+156.2				−2	+4	−3	−1	−2	+5	−12	+5	0

SPECIAL PHENOMENA.—June 3, a small whirlwind passed over one corner of the Observatory, causing a sharp fall in pressure within the building of about 0.16 mm. July 2, a thunderstorm did considerable damage north of the Observatory. July 18, lightning struck the Observatory for the first time since its foundation. Unusually bright sunsets during the autumn, beginning about Sept. 20. The last frost occurred May 14 and the first Sept. 26. The last measurable snow fell March 15 and the first Nov. 11. The first cherry blossoms were observed May 10, about a week later than usual. Apple trees began to blossom May 19, and were in full bloom as late as June 2. First ripe blueberries observed July 12. Ice disappeared from the neighboring ponds March 25, and reappeared Nov. 25, about a week earlier than usual.

TABLE II.

SUMMARY FOR 1901.

Month.	Number of Hours Wind blew from							
	N.	NE.	E.	SE.	S.	SW.	W.	NW.
January	131	51	37	27	44	104	166	184
February	13	10	3	1	10	46	236	353
March	44	84	85	30	61	129	165	146
April	99	316	124	64	30	18	18	51
May	37	181	102	57	125	91	85	66
June	45	55	45	33	134	189	136	83
July	38	107	75	61	94	164	166	39
August	72	66	69	96	195	91	104	51
September	85	75	22	26	127	145	134	106
October	50	27	27	32	138	179	117	174
November	79	53	17	16	23	95	170	267
December	140	23	17	58	113	112	100	181
Year	833	1048	623	501	1094	1363	1597	1701
1886–1901	881	845	565	544	1171	1472	1667	1617
Departures	−48	+203	+58	−43	−77	−109	−70	+84

TABLE II.

SUPPLEMENTARY.

H_a = 34 ft., or 10.4 m. above ground.

Month.	Bright Sunshine.		Wind.					
			Mean Velocity.		Maximum Velocity.			
	Duration in Hours.	Per cent. of Possible.	Miles per Hour.	Metres per Second.	Miles per Hour.	Metres per Second.	Direction.	Date.
January	124.5	43	16.6	7.4	43	19	S	16
February	197.9	69	20.1	9.0	51	23	NW	13
March	140.8	39	17.9	8.0	47	21	S	21
April	82.6	21	17.5	7.8	45	20	E	3
May	197.7	45	15.8	7.1	43	19	NW	8
June	293.7	67	14.0	6.3	38	17	W	9
July	246.9	55	12.2	5.5	38	17	W	22
August	213.3	51	11.5	5.1	40	18	S	7
September	198.9	55	13.0	5.8	38	17	SW	17
October	226.4	68	15.8	7.1	45	20	SW	19
November	136.6	48	16.9	7.6	54	24	NE	24
December	112.1	41	18.1	8.1	60	27	S	15
Year	2171.4	50	15.8	7.1	60	27	S	15, XII
1886–1901	2167.2	50	14.8	6.6	72	32	SE	I, '93
Departures	+4.2	0	+1.0	+0.5				

N.B. — True wind velocities are recorded, which are about 18 per cent. lower than those recorded by a Robinson anemometer with the factor 3. The velocities for preceding years given here are corrected in the same ratio. The maximum velocity is for an interval of five minutes. No calms of one hour's duration occurred, and there are none in the average from 1886 to 1901.

TABLE III.

SUMMARY FOR 1901 AT THE BASE STATION.

$\lambda = 71° 7' 10''$ W. $\phi = 42° 13' 20''$ N. H = 210 ft., or 64 m. h_t = 6 ft, or 1.8 m. h_r = 1 ft., or 0.3 m.

Month.	Air Temperature, in degrees Fahrenheit.									Precipitation.			
	Mean Max.	Mean Min.	Mean of Max. and Min.	Mean Range.	Max.	Date.	Min.	Date.	Range.	Rain and Melted Snow.		Unmelted Snow.	
										Inches	Mm	Inches	Cm
January ..	33.3	18.8	26.1	14.5	52	9	− 7	20	59	2.12	53.8	9	23
February .	27.7	13.5	20.6	14.2	44	26	6	9	38	1.04	26.4	9	23
March ...	42.2	27.9	35.0	14.3	58	21	6	7	52	7.27	184.7	0	0
April	50.0	37.7	43.9	12.3	79	29	31	28	48	6.79	172.5	.	.
May	60.9	44.8	52.8	16.1	83	22	38	6	45	5.98	151.9	.	.
June.....	76.5	56.8	66.6	19.7	92	28	44	16	48	1.40	35.6	.	.
July	80.2	63.8	72.0	16.4	91	2	53	25	38	6.37	161.8	.	.
August ...	76.9	61.7	69.3	15.2	84	17	56	28	28	2.80	71.1	.	.
September	72.1	55.2	63.6	16.9	84	7	37	26	47	4.20	106.7	.	.
October ..	62.6	42.8	52.7	19.8	74	23	30	29	44	3.66	93.0	.	.
November	42.1	28.3	35.2	13.8	65	1	8	29	57	2.42	61.5	4	10
December.	38.6	23.0	30.8	15.6	64	14	2	22	62	7.90	200.7	8	20
Year.....	55.2	39.5	47.3	15.7	92	28, VI	− 7	20, I	99	51.95	1319.7	30	76
1887–'01*.	56.7	39.4	48.0	17.3	95	VII, '98	−13	II, '96	108	48.96	1243.6	59	150
Departures	−1.5	+0.1	−0.7	−1.6						−2.99	+76.1	−29	−74

* The mean temperatures for 1892 and 1893 are missing.

N. B. — Under "Unmelted Snow," 0 indicates amounts less than 1 inch (2.5 cm.), and a dot (.) absence of snow.

TABLE IV.

SUMMARY FOR 1901 AT THE VALLEY STATION.

$\lambda = 71° 7' 30''$ W. $\phi = 42° 14' 0''$ N. H = 50 ft., or 15 m. h_t = 6 ft., or 1.8 m. h_r = 1 ft., or 0.3 m.

Month.	Air Temperature, in degrees Fahrenheit.									Precipitation.	
	Mean Max.	Mean Min.	Mean of Max and Min.	Mean Range.	Max.	Date.	Min.	Date.	Range.	Inches	Mm
January ...	34.0	17.4	25.7	16.6	51	9	−6	20	57	2.10	53.3
February ..	30.4	11.6	21.0	18.8	44	26	0	3	44	.79	20.1
March	43.1	27.3	35.2	15.8	57	21	5	7	52	7.43	188.7
April	50.0	37.0	43.5	13.0	77	29	27	14	50	7.27	184.7
May	63.8	45.4	54.6	18.4	83	22	37	2	46	5.92	150.4
June	78.9	54.3	66.6	24.6	96	28	40	16	56	1.52	38.6
July	83.1	61.8	72.5	21.3	95	2	48	27	47	6.33	160.8
August	80.0	58.5	69.2	21.5	88	24	50	28	38	3.00	76.2
September .	74.9	50.8	62.8	24.1	89	5	32	26	57	3.72	94.5
October ...	64.4	38.3	51.3	26.1	76	10	23	29	53	3.75	95.3
November ..	43.1	25.1	34.1	18.0	67	1	7	29	60	3.39	86.1
December ..	38.7	20.8	29.7	17.9	63	14	−3	22	66	8.12	206.2
Year	57.0	37.3	47.2	19.7	96	28, VI	− 6	20, I	102	53.34	1354.9
1889–1901 .	58.1	37.3	47.7	20.8	98	VII,'98	−22	II, '93	120	45.63	1243.6
Departures .	−1.1	0.0	−0.5	−1.1						+7.71	+111.3

TABLE V.

OBSERVATIONS MADE TWICE DAILY IN 1902.

JAN., 1902.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	48.5	55.7	2	9	30	1	0.5	0.7	50	51	0	0	NW 14	NW 13	.
2	55.2	43.9	12	33	33	9	1.1	4.0	65	82	2	3	W 4	S 15	.
3	38.8	43.4	25	14	38	14	3.0	1.1	95	58	10*°	0	W 11	W 13	1.0
4	48.0	52.9	1	9	14	1	0.6	0.7	58	52	0	0	NW 11	NW 7	.
5	52.3	50.6	9	24	27	6	0.9	1.9	60	63	5	0	W 6	W 7	.
6	51.3	49.9	28	27	33	20	2.5	2.7	84	74	3	7	NW 3	SE 4	.
7	48.0	45.7	24	23	30	22	3.2	2.9	100	98	10	10^{*2}	NE 6	N 8	8.1
8	45.5	45.0	18	23	26	15	2.3	2.9	96	97	10	10	N 8	N 7	3.1
9	45.3	44.8	18	27	33	18	2.2	2.5	91	72	1	4	NW 7	W 4	.
10	40.0	37.8	27	28	30	24	3.6	3.0	100	82	10	5	S 5	NW 7	0.2
11	34.8	28.8	31	32	38	26	3.3	4.6	82	100	9	10*	S 2	SE 4	0.2
12	22.1	27.6	20	19	32	17	2.5	1.5	97	64	4	1	SW 10	W 10	14.0
13	31.3	36.2	11	13	20	10	1.2	1.1	73	65	6	0	W 7	W 8	.
14	42.4	46.6	9	19	22	8	0.9	1.2	64	50	0	4	NW 9	W 7	.
15	44.8	40.4	23	29	38	17	2.6	3.1	89	81	0	4	S 7	SW 7	.
16	40.1	38.8	28	32	39	28	2.6	3.0	72	71	4	3	W 5	SW 6	.
17	38.8	43.5	12	17	32	12	1.2	0.8	72	40	3	0	NW 9	NW 8	.
18	44.8	41.5	19	35	38	14	0.7	4.2	35	82	2	10	S 8	S 12	.
19	42.3	49.4	32	21	37	21	3.3	1.3	75	51	9	0	W 7	NW 9	0.5
20	53.6	54.6	13	24	31	11	0.7	2.7	40	87	0	0	N 7	E 5	.
21	51.3	44.1	28	36	36	24	2.7	5.4	78	100	10	10●	SE 8	E 10	0.3
22	31.0	29.3	45	39	46	36	7.6	5.8	100	99	10	4	SE 13	SW 5	18.5
23	30.0	35.0	35	28	39	27	4.6	2.7	89	75	6	0	W 9	W 8	0.0
24	39.9	45.6	26	28	35	23	2.5	2.2	73	60	5	0	SW 8	W 7	.
25	51.3	55.8	20	27	32	19	1.1	2.7	46	77	0	0	N 5	E 5	.
26	58.2	52.5	27	32	34	25	2.7	4.4	81	98	10	10*	S 2	SE 13	0.3
27	41.6	46.0	48	28	50	28	8.5	1.1	100	33	10●°	1	S 15	W 12	5.6
28	54.7	58.9	10	13	28	9	0.6	0.7	41	40	0	0	NW 16	W 7	.
29	59.1	53.5	6	14	15	6	0.6	0.7	50	38	8	10	NW 7	NW 6	.
30	49.1	51.2	10	17	20	10	1.2	0.9	75	44	10*	0	NW 6	NW 7	0.3
31	54.2	51.3	9	23	26	9	1.0	2.2	66	74	9	10	N 5	E 6	0.0
Means	44.8	45.2	20.0	24.0	31.7	16.3	2.3	2.4	74.1	69.6	5.4	3.7	7.4	8.0	52.1
'86-'02	44.7	44.4	21.6	25.0	32.8	17.0	2.6	2.8	76.3	71.7	5.9	5.1	7.8	8.0	102.1
Depart.	+0.1	−0.8	−1.6	−1.0	−1.1	−0.7	−0.3	−0.4	−2.2	−2.1	−0.5	−1.4	−0.4	0.0	−50.0

REMARKS.

2, ⊕ 10.5 A — 10.7 A; ✳° or △° 11.2 P — 11.5 P. **3,** ✳ A; ⊠. **5,** ⊕ 2.7 P — 3.2 P. **6,** ∞ A — P. **7,** ∞^2 A; V^2 A; ✳ 1.3 P — 11.0? P; ⊠. **8,** ∞^2 A — P; ⊠. **9,** ∞ A — P; ⊠. **10,** ≡ A; ✳ 8.9 A — 9.5 A, 10.1 A — 0.9 P; ∞^2 P; ⊠. **11,** ≡ A; ∞^2 A — P; ✳ 3.5 P —; ⊠. **12,** ✳ — 7.2 A; ⊠. **13,** ∞ A — P; ⊠. **14,** ⊠. **15,** ∞^2 A — P; ⊕° 0.5 P; ⊠. **16,** ∞^2 A — P; ⊠. **17,** ⊠. **18,** ∞^2 A — P; ⊍° 7.5 P — 7.7 P; ⊠. **19,** ✳° 2.0? A — 6.0? A; ⊠. **20,** ∞^2 A in lowlands in N to E; ∞ P; ≡° in lowlands P; ⊠. **21,** ∞ in lowlands A; ◍ 7.2 P — 10.2? P; ≡ P; ⊠. **22,** ◍ 2.5? A — 3.5 P; ≡ A — P. **23,** ◍° 7.5 A — 8.0 A. **26,** $⌴^2$ A; Dense smoke in lowlands A; ✳° 0.5 P — 0.7 P, 5.2 P — 10.0? P; ◍ 10.0? P —. **27,** ◍ — 11.1 A; ≡ A. **29,** ⊕° 8.0 A — 8.2 A; $⊕^2$ 1.1 P — 1.5 P. **30,** ✳° 7.1 A — 0.2? P; ⊠. **31,** ⊍° 1.1 A —; ∞^2 A; ⊕° 7.5 A — 9.3 A; ✳° 4.4 P — 6.5? P, 9.5? P; ⊠.

FEBRUARY, 1902.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	50.5	47.7	29	32	32	23	3.5	4.6	89	100	10*	10*	E 6	NE 6	3.1
2	36.5	14.9	37	34	48	32	5.6	4.4	100	91	10•	10*°	E 7	SW 17	14.5
3	25.7	34.7	25	19	34	19	1.7	1.2	55†	52	8	0	W 20	W 11	0.0
4	38.6	36.5	12	15	26	11	1.1	1.8	63	89	5	6*	SW 5	W 8	0.2
5	40.4	44.0	8	13	21	7	0.9	1.0	62	55	4	0	NW 7	NW 9	0.0
6	45.0	43.0	9	19	25	7	1.0	0.9	66	40	0	4	W 9	W 7	.
7	39.1	34.7	12	20	33	11	1.0	1.2	60	51	0	3	W 7	W 10	.
8	30.0	24.4	15	17	20	13	1.3	1.5	64	67	0	10	W 9	W 11	0.0
9	27.1	31.6	22	27	35	16	1.6	2.3	62	67	4	0	W 13	W 10	0.2
10	33.3	35.2	24	22	33	19	2.4	1.6	77	60	0	1	SW 8	W 8	.
11	38.0	38.2	11	18	25	9	0.9	1.2	58	56	0	0	NW 8	W 7	.
12	38.0	38.5	14	22	27	11	1.4	1.9	70	69	7	0	W 4	NE 2	.
13	38.6	38.9	17	20	30	16	1.5	2.1	72	80	7	10*	NW 5	NW 11	0.2
14	43.4	45.1	20	26	36	18	1.8	1.6	73	52	1	0	NW 10	NW 9	0.5
15	46.3	48.2	19	25	35	17	1.4	1.0	59	32	1	2	NW 7	N 8	.
16	49.2	44.4	16	26	36	14	1.5	2.7	70	79	0	9	N 4	SE 8	.
17	29.7	12.9	29	31	31	25	4.0	4.4	100	99	10*²	10*	NE 20	N 13	43.2
18	16.6	24.1	25	20	32	20	2.5	1.7	96†	70	10	8	W 10	W 14	9.1
19	31.5	39.5	13	21	24	11	1.1	1.8	64	68	4	0	W 12	W 14	.
20	47.9	48.4	17	31	33	14	1.2	1.3	54	36	0	7	W 8	W 7	.
21	48.4	44.5	22	31	33	22	1.3	4.4	50	100	7	10*	N 3	NE 7	5.1
22	38.5	38.6	30	26	31	26	4.2	2.2	100	65	10*	9	NE 14	N 10	20.6
23	42.1	46.8	18	26	30	17	0.8	2.3	38	69	0	0	N 9	SE 3	.
24	48.4	48.3	25	30	38	21	3.0	3.8	95	95	7	6	S 7	S 7	.
25	48.6	44.6	34	34	42	28	4.7	4.9	98	100	10	10•	SW 3	NE 10	0.0
26	35.7	34.1	36	37	38	34	5.4	5.6	100	100	10•	10•	NE 14	N 9	40.1
27	38.7	41.9	40	40	49	36	6.3	6.3	100	99	10	2	N 5	S 5	0.8
28	42.7	35.4	36	40	42	32	5.4	6.3	100	100	10	10•²	SE 5	SE 15	7.9
Means	38.9	37.8	22.0	25.8	33.0	18.9	2.4	2.7	74.8	72.9	5.2	5.8	8.5	9.1	145.5
'86-'01	43.8	43.6	21.7	25.3	33.2	17.5	2.5	2.7	75.1	70.1	5.6	5.8	8.1	8.2	104.3
Depart.	−4.9	−5.8	+0.3	+0.5	−0.2	+1.4	−0.1	±0.0	−0.3	+2.8	−0.4	0.0	+0.4	+0.9	+41.2

† Interpolated.

REMARKS.

1, ✱ 4.9? A — 8.5 P; ≡ P; ◍ 8.5 P —; ⊠. 2, ◍ — 7.6 P; ✱ 7.6 P — 9.5 P; ≡ A — P. 3, ✱° 8.7? A; ∞ A. 4, ∞² A; ⊕° 8.9 A — 5.0 P; ✱ 5.0 P — 8.9 P. 5, ∞² A; ⊕° 8.9 A — 11.0? A; ✱° 2.0 P; ⊠. 6, ⊠. 7, ∞² A — P. 8, ∞ A — P; ⊕ 1.8 P — 2.8 P; ✱° 3.3 P, 9.2 P — 11.7? P. 12, ∞² A; ∞ P; ⊕ 8.5 A — 3.5 P. 13, ∞² A; ⊕° 8.4 A — 10.0 A, 2.0 P — 3.2 P; ✱ 2.9? A — 5.5? A, 7.2? P —. 14, ✱ — 0.7? A. 16, ∞² A; ⊕² 1.7 P — 4.2 P; ⏅ 10.0 P — 11.5 P —. 17, ✱² 6.5? A — 4.0 P; ◍? △ 4.0 P — 4.5 P; ✱² 4.5 P — 5.5 P; ✱ ◍ △ 5.5 P — 7.3 P; ∽ P; ✱² 7.3 P —; ⊠. 18, ✱ — 6.8 A, 8.7 A — 9.2 A; ⊠. 19, ⊠. 20, ⊠. 21, ∞² A — P; ≡ P; ✱ 1.8 P —; ⊠. 22, ✱ — 3.4 P; ≡ A; ⊠. 23, ⊠. 24, ∞² A; ∞ P; ⊠. 25, ⊔ A; ≡² in lowlands A; ⊕° 9.0 A — 9.3 A; ≡ P; ◍ 7.8 P —; ⊠. 26, ◍ —; ≡ A — P; ⊠. 27, ◍ — 1.5? A; ≡ A; ∞² A — P; ⊠. 28, ≡ A — P; ◍° 2.3 P — 6.3 P; ● 6.3 P —; ⊠.

MARCH, 1902.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	35.3	38.6	43	44	58	40	6.8	6.5	98	86	1	2	S 10	S 7	41.4
2	33.9	21.9	44	44	53	38	7.3	6.3	100	84	10●	10●°	SE 6	S 16	4.1
3	30.5	34.7	38	35	45	35	4.4	3.1	76	68	7	1	W 10	W 7	0.0
4	37.9	42.7	30	31	37	27	2.7	2.3	67	55	3	8	W 9	W 5	.
5	45.0	31.7	26	31	31	24	1.9	4.4	59	100	10	10✱	NE 3	NE 18	33.0
6	36.1	46.8	25	27	35	24	2.9	1.3	87	40	8	0	NW 11	NW 7	6.3
7	50.2	51.1	27	40	46	23	1.5	3.1	46	52	1	10	SW 8	SW 8	.
8	56.5	55.7	34	33	42	33	4.2	3.8	84	81	10	10	NE 7	E 8	.
9	47.6	40.6	35	33	42	33	5.2	4.7	100	100	10●	10	SE 12	NW 12	14.7
10	44.4	50.4	34	35	42	32	3.3	3.5	69	70	0	0	NW 11	NW 7	.
11	53.9	49.6	34	34	48	29	4.6	4.6	93	96	3	10	E 1	S 11	.
12	44.9	40.1	43	50	66	34	5.4	7.6	79	82	10	8	SW 10	S 11	0.0
13	35.0	35.3	50	51	61	45	8.5	9.5	93	100	10●	10	SW 10	NW 6	1.3
14	48.3	55.2	32	31	51	31	2.4	2.1	55	51	2	0	N 12	E 3	2.3
15	57.5	56.6	34	34	51	29	4.0	4.0	81	81	2	2	SE 3	SE 6	.
16	53.8	47.8	41	51	59	31	6.5	8.2	100	86	10	10●°	SE 6	S 14	0.0
17	42.5	42.0	47	39	58	39	7.6	6.0	93	100	10	10	W 7	NE 2	30.0
18	42.3	40.1	29	26	39	26	1.5	1.3	48	43	5	9	N 7	NW 14	0.0
19	29.0	31.8	23	31	37	22	1.9	3.1	63	75	10✱	10✱°	NW 21	NE 11	5.6
20	37.2	35.7	31	36	39	28	3.8	5.4	92	100	8	10●°	NW 5	NW 5	3.1
21	38.7	40.1	38	46	54	36	5.8	6.8	100	77	10●°	10●°	N 7	NW 6	0.2
22	42.0	43.0	47	51	57	45	6.3	6.5	74	69	9	10	N 8	S 3	0.0
23	44.1	43.1	43	47	60	41	6.0	2.2	85	27	7	8	NW 3	NW 9	.
24	43.3	45.5	36	35	47	33	2.9	4.2	56	82	0	9	N 3	NE 6	.
25	46.6	49.5	35	33	44	31	3.0	3.8	61	80	5	3	N 7	E 4	.
26	53.1	52.4	33	34	47	28	3.8	3.1	83	67	5	0	NE 4	SE 4	.
27	51.2	47.0	36	38	55	29	3.0	3.1	60	58	1	9	SW 6	S 10	.
28	40.4	43.2	42	46	52	37	6.0	7.9	87	100	6	10●°	SW 7	S 8	1.8
29	37.7	32.9	50	49	52	46	9.1	8.8	100	100	10●²	10	S 15	S 6	27.7
30	35.3	33.5	48	48	65	43	7.0	7.0	82	84	0	7	NW 7	S 7	0.0
31	29.3	28.2	42	37	53	37	4.4	4.0	65	74	5	1	W 8	SW 7	0.0
Means	42.7	42.2	37.1	38.7	49.1	33.2	4.6	4.8	78.5	76.2	6.1	7.0	7.9	8.0	171.5
'86-'02	43.4	42.8	29.5	32.2	40.6	25.5	3.4	3.5	74.0	69.8	6.0	5.5	8.1	8.3	109.6
Depart.	−0.7	−0.6	+7.6	+6.5	+8.5	+7.7	+1.2	+1.3	+4.5	+6.4	+0.1	+1.5	−0.2	−0.3	+61.9

REMARKS.

1, ◍² — 1.5? A; ∞² A — P; ⊕ 11.1 A — 0.2? P. **2,** ◍ 7.9 A — 8.2 P; ≡ A — P. **3,** ∞ A; ⊕° 8.5 A. **5,** ∞² A; ✱° 10.9 A —; ⊠. **6,** ✱ — 6.7? A, 7.8 A; ⊠. **7,** ∞² A — P; ⊕° 3.0 P — 4.0 P; ⊠. **8,** ∞² A; △ 9.7 P — 10.2? P; ◍ 11.2 P —; ⊠. **9,** ◍ — 7.7 P; ≡ A — P; ⊠. **10,** ⊠. **11,** ∞² A — P; ◍ 9.6 P — 10.1 P. **12,** ◍ 0.2 A — 0.6 A; ∞² A — P. **13,** ● 7.1 A — 10.2 A; ∞² A — P; ◍° 12 M — 0.2 P; ● 4.8 P — 4.9 P, 7.5 P — 7.9 P, 9.3? P —. **14,** ◍ — 0.5? A; ✱ △ 0.5? A — 2.5? A. **15,** ∞² A — P; ⊕° 0.6 P — 5.1 P. **16,** ≡ A; ◍° 1.2 P; ◍ 2.1 P — 2.4 P; ◍° 2.8 P — 2.9 P, 7.2 P —. **17,** ◍ — 0.4? P; ◍° 2.0 P — 2.4 P; ● 5.0 P — 5.4 P, 9.9 P — 10.1 P; ≡ P. **18,** ∞ A — P; ⩂ 7.5 P — 8.8? P. **19,** ✱ 6.2? A — 9.9 A; △ ◍ 9.9 A — 10.2 A; ● 10.2 A — 4.6 P; ✱ 5.8 P — 10.3? P; ᔕ² A — P. **20,** ≡ P; ● 2.2 P —. **21,** ◍° — 9.4 A, 6.6 P — 8.1 P; ≡ A; ∞² A. **22,** ●° 7.4 A — 7.7 A, 8.5 A; ∞² A — P. **24,** ∞ A. **25,** ⊕° 8.8 A — 1.2 P. **26,** ⌴² A; ∞² A. **27,** ⊕° 9.9 A — 10.5? A; ∞ A — P; ◍ 8.8 P —. **28,** ◍ — 3.0? A; ∞² A; ◍ 0.7 P — 2.2 P, 3.4 P — 5.8 P, 7.0? P —; ≡ P. **29,** ◍² — 3.5? P; ≡ P; ◍ 8.9 P —. **30,** ◍ — 0.5? A. **31,** ●° 2.0? A — 4.0? A.

APRIL, 1902.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	25.8	27.3	32	40	49	30	3.8	4.0	84	65	7	6	NW 4	W 10	0.0
2	29.1	33.4	38	38	44	36	3.5	3.3	62	59	8	0	W 12	W 12	.
3	36.5	41.5	36	37	47	31	3.0	3.1	58	62	3	3	W 11	W 6	.
4	45.2	44.2	36	38	47	31	3.5	4.2	67	72	1	8	NE 3	S 5	.
5	41.6	41.3	36	36	43	33	5.2	4.7	96	88	10●°	10	NE 7	N 8	0.0
6	43.5	43.2	36	41	53	31	3.5	4.7	70	73	1	9	NW 3	S 6	.
7	44.9	47.8	37	38	43	35	5.4	5.6	97	94	10●°	10	E 5	E 6	1.3
8	47.0	39.2	36	39	39	36	5.4	6.0	100	100	10●°	10●	E 11	NE 17	12.9
9	32.7	34.9	41	40	50	39	6.5	6.3	100	100	10●²	10	E 10	S 3	24.4
10	34.7	37.5	38	36	41	35	5.8	5.4	100	100	10●	10	NE 5	NW 5	3.3
11	38.5	39.1	37	44	46	33	5.4	4.0	94	57	10●	9	W 4	NW 5	0.0
12	36.7	36.2	45	49	58	38	5.6	4.6	76	53	2	10	SW 6	SW 5	0.0
13	35.9	37.9	42	44	53	36	4.7	4.2	68	59	3	2	W 10	NW 10	0.0
14	41.6	44.3	43	36	51	36	4.4	3.3	62	64	8	2	NW 10	NW 9	.
15	47.6	46.6	40	43	57	30	2.9	3.6	47	53	1	0	NW 5	SW 4	.
16	47.2	44.9	49	46	60	38	3.6	3.3	43	43	0	6	NW 4	S 7	.
17	43.4	48.3	45	39	56	38	2.9	4.9	40	84	3	0	S 3	SE 5	.
18	44.4	45.4	43	44	56	36	5.6	4.0	80	58	8	0	SW 2	S 3	0.0
19	46.7	46.3	48	43	62	36	5.6	4.4	65	62	0	3	SW 2	S 7	.
20	46.3	45.3	40	45	59	36	6.3	6.8	100	90	10	7	S 6	S 9	.
21	46.2	45.4	50	52	64	43	6.5†	6.8	72†	70	10	10	SW 4	S 5	0.0
22	43.0	44.0	54	41	64	41	7.0	6.5	67	100	8	10	W 4	NE 10	0.0
23	43.3	38.3	41	59	76	39	6.5	8.8	100	69	10	7	S 2	S 10	.
24	44.5	46.7	47	49	64	43	3.3	3.0	43	36	1	1	NW 11	W 7	.
25	51.8	49.3	44	45	59	36	2.9	4.6	41	59	0	10	NW 6	S 7	.
26	43.2	35.9	45	58	63	40	6.8	11.8	88	94	10●	10	SE 9	S 13	5.8
27	35.4	42.2	55	44	59	44	4.7	4.7	42	67	1	5	SW 14	W 8	.
28	47.2	48.8	51	62	70	42	4.4	4.4	47	31	3	0	W 6	NW 3	.
29	51.8	50.9	67	55	74	54	7.0	4.7	41	43	0	10	S 2	S 9	.
30	46.7	44.9	51	51	55	47	9.5	9.5	100	100	10●	10	S 13	S 3	23.6
Means	42.1	42.2	43.4	44.4	55.4	37.4	5.0	5.1	71.7	70.2	5.6	6.3	6.5	7.2	71.3
'86-'02	44.8	44.5	42.1	42.7	53.5	35.4	4.8	4.9	69.3	68.0	5.5	5.1	7.6	7.2	77.0
Depart.	−2.7	−2.3	+1.8	+1.7	+1.9	+2.0	+0.2	+0.2	+2.4	+2.2	+0.1	+1.2	−1.1	0.0	−5.7

† Interpolated.

REMARKS.

1, ∞² A—P; ✱ 0.8 P—1.0 P. 4, ∞² A—P; ⊕ 1.8 P—3.7 P. 5, ●° 7.1 A—9.7 A, 4.9 P—6.7? P; ∞² A—P. 6, ⊕ 9.3 A—10.5? A, 4.5 P—5.1 P. 7, ●° 2.3? A—11.2 A. 8, ●° 2.3? A—9.9 A; ≡ A, P; ● 11.3 A—. 9, ●²—0.9? P; ≡ A—P. 10, ● 6.2? A—9.4 A, 1.7 P—5.8 P; ≡ A—P. 11, ● 7.2? A—10.7 A. 12, ●° 2.2? A—5.5? A; ∞ A; ● 9.0 P—10.1 P. 13, ●° 0.7 P. 14, ⊍ 7.6 P—9.2 P—. 16, ∞ A—P; ⊕ 9.6 A—5.2 P; ⊍° 7.5 P—?. 18, ≡ in lowlands A; ∞ A—P; ●° 4.8 P. 19, ∞² A—P. 20, ≡ A, ∞² A—P; ⊍° 10.0 P—11.0 P—. 21, ∞ A—P; ●° 3.1 P—4.4 P, 11.3 P—. 22, ●—2.0? A; ∞² A—P; ≡ P. 23, ≡ A; ∞² A—P. 25, ⊕ 1.2 P—3.5? P; ∞ P; ●° 11.1 P—. 26, ●—8.2 A, 8.9 A—0.7 P; T in NW 8.7 A, 11.2 A—11.5 A; ⚡ in S 7.6 P—? P; ≡ P. 29, ∞² A—P; ⊕ 5.2 P—5.7 P. 30, ● 0.9? A—4.7 P; ≡ A—P; ●² 11.7? P—.

MAY, 1902.

Date.	Atmospheric Pressure, in mm. 700+ A.M. 8.00	P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure, in mm. A.M. 8.00	P.M. 8.00	Relative Humidity, in per cent. A.M. 8.00	P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00	P.M. 8.00	Precipitation, in mm. P.M. 8.00
1	43.6	45.3	50	51	61	44	6.3	7.0	72	73	7	4	NW 11	NW 10	9.1
2	47.8	47.1	52	49	64	44	5.6	5.8	58	67	2	2	N 6	S 6	.
3	46.9	48.2	47	43	49	42	7.6	6.5	94	96	10●	10	SE 3	NE 5	1.3
4	50.1	47.9	51	45	56	39	6.5	7.6	67	100	3	10●○	NE 6	S 5	0.2
5	43.7	44.1	46	61	68	43	7.9	9.8	100	73	10	0	SW 7	N 7	4.6
6	49.2	47.1	55	50	68	50	5.8	5.6	53	61	1	9	N 5	S 5	.
7	40.7	38.1	52	63	72	45	9.5	6.5	96	44	10	10	S 8	NW 10	0.8
8	41.5	40.5	56	61	71	49	6.3	5.6	56	43	1	0	NW 7	W 7	.
9	34.0	39.9	59	42	65	42	7.3	3.3	57	54	8	0	SW 10	W 7	0.0
10	44.1	46.6	35	44	50	31	2.6	2.2	53	33	0	8	W 11	NW 5	.
11	49.2	49.3	41	45	61	34	2.1	5.4	35	69	3	0	NW 8	S 5	.
12	51.2	46.7	49	50	61	41	4.9	3.1	57	38	5	9	E 3	S 10	.
13	42.8	43.6	48	52	65	46	7.9	2.2	91	24	10●	0	W 4	N 7	1.3
14	45.8	44.4	46	48	65	37	3.1	5.6	42	67	0	10	W 3	S 4	.
15	47.5	48.6	49	48	59	44	5.4	5.2	61	59	9	0	NE 6	S 6	0.0
16	47.8	43.3	54	64	70	41	10.6	4.4	54	30	5	9	W 7	W 5	.
17	42.8	42.2	60	53	71	51	5.4	6.8	42	66	1	2	NW 7	SE 6	.
18	44.5	44.1	61	58	77	48	6.3	6.8	46	55	0	6	SW 2	S 3	.
19	45.6	40.7	59	52	63	50	8.2	9.8	64	100	7	10●○	SE 4	NW 3	7.1
20	42.8	47.9	50	50	62	45	7.3	7.0	81	77	3	0	NE 4	E 3	1.0
21	53.5	49.7	52	53	70	43	3.8	6.8	41	66	1	4	N 3	S 6	.
22	48.9	44.0	61	60	77	47	9.1	8.8	67	69	5	6	W 6	SW 9	.
23	41.3	40.9	64	71	88	53	11.8	14.1	79	72	7	10	SW 6	SW 7	.
24	40.7	38.3	67	66	82	62	14.6	13.6	88	86	10	7	SW 3	S 8	0.0
25	40.6	39.9	67	61	75	57	14.1	13.6	84	100	8	10●○	SW 5	S 5	0.0
26	36.8	38.4	58	61	77	56	12.2	11.0	100	81	10	6	SW 8	SW 3	1.0
27	36.5	31.9	57	53	71	53	11.8	10.2	100	100	9	10●	S 3	W 7	8.4
28	34.5	38.4	50	42	55	42	7.0	4.9	75	74	8	7	SW 6	W 8	0.2
29	42.5	44.7	45	54	59	35	4.9	3.6	66	37	3	1	W 7	W 6	.
30	42.4	48.5	53	57	66	48	6.0	7.3	60	64	9	5	SW 14	W 5	0.0
31	56.3	56.2	53	51	71	47	5.8	6.5	57	68	0	0	NE 6	S 8	.
Means	44.4	44.1	53.1	53.5	66.7	45.5	7.3	7.0	67.6	66.0	5.2	5.3	6.1	6.2	35.0
'86-'02	44.8	43.7	53.4	53.1	65.2	45.6	7.7	7.6	73.6	74.8	6.1	5.8	6.1	6.6	95.6
Depart.	+0.1	+0.4	−0.3	+0.4	+1.5	−0.1	−0.4	−0.6	−6.0	−8.8	−0.9	−0.5	0.0	−0.4	−60.6

REMARKS.

1, ●² — 2.0? A; ●° 11.0 A — 11.5 A, 11.7 A — 0.8 P; ⌈⚡ A — ? A. 3, ● 5.8? A — 8.3 A; ●° 1.3 P, 2.0 P. 4, ●° 5.3 P — 8.2 P; ● 11.4? P —. 5, ● — 3.5? A; ⌈⚡ 1.5 A — 3.0? A; ●° 10.4 A, 11.7 A — 0.7 P; ∞² A — P. 6, ● 10.4 P —. 7, ● — 1.5? A; ●° 8.3 A; ≡ A; ∞² A — P. 9, ●° 5.9 A — 6.2 A, 6.9 A — 7.0 A; ∞ A — P. 10, ⊕ 0.4 P — 4.8 P. 12, ∞ A — P; ⊕ 9.9 A — 0.7 P. 13, ● 5.0 ? A — 8.9 A; ∞ A; ⊕ 2.9 P — 4.1 P. 14, ●° 8.1 P — 8.3 P. 15, ∞ A. 17, ∞² A — P. 18, ∞² A — P. 19, ●° 10.1 A — 10.0? P; ≡ P. 20, ∞² A — P. 21, ∞² A. 22, ∞² A — P; ⊕ 1.7 P — 2.6 P. 23, ∞² A — P; ⚡ in NW 8.2 P — ?. 24, °7.3? A — 7.9 A, 8.6 A — 11.2 A; ∞² A — P; T in N 5.9 P — 6.5 P; ⚡ in NW 7.8 P — 9.7 P. 25, ●° 11.8 A — 0.7 P, 1.0 P — 1.8 P, 6.2 P, 7.4 P — 8.2 P, 9.5? P — 10.7? P; ≡ P. 26, ●° 7.6 P. 27, ≡● ? A; ≡ A; ●° 12 M, 3.9 P; ● 2.1 P — 2.6 P, 4.4 P — 9.5 P. 30, ●° 6.0 A — 6.9 A; ∞ A.

JUNE, 1902.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	57.4	52.9	59	58	75	46	7.3	8.8	58	73	0	7	SW 5	S 8	.
2	49.8	44.5	68	70	86	54	12.2	13.1	71	69	0	6	SW 7	SW 9	.
3	41.7	40.7	74	64	90	64	14.6	14.6	71	94	5	9•^{2}	W 8	SW 9	5.1
4	37.3	41.3	66	51	81	51	15.1	9.1	93	96	7	10	W 8	NE 9	5.3
5	46.6	48.8	52	51	63	47	7.3	7.0	75	75	9	1	NE 4	S 8	0.0
6	50.9	47.0	58	56	68	46	7.0	6.3	57	56	1	5	NW 4	S 7	.
7	43.1	36.4	59	62	75	51	11.0	14.1	85	100	6	10•	S 6	SW 6	0.5
8	32.6	35.3	68	53	79	53	16.8	6.0	96	58	8	1	W 2	NW 14	8.9
9	42.4	43.5	51	60	68	44	5.4	6.3	56	48	0	1	W 7	SW 8	.
10	42.1	38.3	61	57	71	49	7.9	11.8	58	100	5	9•	SW 10	S 8	1.8
11	44.0	41.3	54	49	61	49	6.0	7.6	57	84	2	10•	NE 6	S 7	1.0
12	38.7	41.0	61	61	83	48	13.6	11.0	100	81	4	8	SW 7	W 6	0.0
13	42.9	41.0	52	66	69	50	9.8	15.1	100	96	10•	10	E 3	SW 4	14.2
14	47.2	47.3	57	61	73	52	11.8	10.2	100	76	10	5	NE 4	SE 6	11.2
15	43.9	39.4	58	58	70	55	12.2	12.2	100	100	10	10	W 1	E 4	2.3
16	36.0	33.4	66	68	85	55	16.2	14.6	100	85	10	10	SW 3	SW 6	0.0
17	31.6	38.9	64	61	71	60	11.4	7.3	75	54	1	1	NW 9	NW 9	1.8
18	43.6	43.2	60	68	76	50	7.3	7.3	56	40	0	0	W 10	W 6	.
19	41.8	38.8	66	61	69	58	11.0	13.6	68	100	8	10	SW 4	NW 6	6.6
20	41.8	42.4	65	66	76	56	9.1	8.5	59	52	2	1	NW 6	N 4	0.2
21	42.6	40.5	61	62	68	57	10.6	14.1	79	100	10	10•	SE 5	S 9	17.3
22	43.1	42.2	56	61	71	54	10.2	6.8	88	50	6	6	N 6	NW 8	4.1
23	43.8	43.4	56	58	67	47	7.0	6.5	63	54	0	1	W 6	W 6	.
24	44.0	43.5	56	60.	68	47	7.3	7.6	64	59	3	2	W 8	W 4	.
25	43.8	40.0	59	59	73	51	8.2	11.8	65	93	1	10	W 5	S 7	.
26	27.4	32.1	62	61	73	56	14.1	6.3	100	46	10•	5	S 10	W 13	11.9
27	34.8	37.2	58	59	67	51	6.8	8.2	55	66	3	0	W 8	W 9	.
28	41.9	42.7	61	67	75	52	8.5	9.1	62	56	5	7	NW 9	W 7	.
29	43.5	39.7	64	53	67	53	8.5	9.5	55	99	5	10	N 3	NE 5	3.8
30	43.8	43.6	60	59	71	52	10.6	8.5	81	67	0	10	N 4	S 6	0.0
Means	42.1	41.3	60.4	59.7	73.0	51.9	10.1	9.8	74.9	74.2	4.7	6.2	5.9	7.3	96.0
'86-'02	44.4	43.8	62.4	62.2	73.8	54.8	11.5	11.4	79.0	78.8	5.7	5.7	5.4	6.3	71.4
Depart.	−2.3	−2.5	−2.0	−2.5	−0.8	−2.9	−1.4	−1.6	−4.1	−4.6	−1.0	+0.5	+0.5	+1.0	+24.6

REMARKS.

2, ∞ A—P; ●° 11.3 P—. **3,** ●°—2.3? A; ⚡ 5 4 P—6.7 P, 7.7 P—9.6 P; ● 5.5 P—7.3? P; ● ▲ 7.9 P—8.0 P; ● 8.0 P—10.5 P, 11.5 P—. **4,** ●—1.2? A, 8.5 P. **5,** ● 1.3 P—1.4 P. **6,** ⊕° 1.3 P—4.6 P. **7,** ∞^{2} A—P; ●° 1.5 P—11.0? P; ≡ P. **8,** ∞^{2} A—P; ●° 0.3 P—1.3 P; T 2.5 P; ●^{2} 2.3 P—2.6 P. **10,** ●° 1.5 P, 3.6 P; ● 3.7 P—4.8 P, 5.9 P—8.7 P. **11,** ⊕° 11.0 A—12 M; ● 7.4 P—8.8 P. **13,** ⚡^{2} 6.1 A—7.2 A; ● 6.4 A—8.7 A; ≡ A; ∞^{2} A—P; ⚡ 7.8 P—9.4 P; ● 8.7 P—9.2 P. **14,** ≡ A. **15,** ● 7.0? A—7.3 A, 8.2 A—9.4 A; ≡ A, P; ●° 4.2 P—7.7 P. **16,** ≡ A; ⊕° 2.1 P—2.2 P; T 6.1 P; ● 6.3 P—6.4 P, 10.7? P—. **17,** ●—3.0? A. **19,** ∞ A; ● 9.7 A—10.0 A, 11.6 A—5.9 P; ≡ P. **20,** ≡ or ● A. **21,** ● 8.0 A—11.7? P; ≡ P. **22,** ⊕ 0.9 P—1.8 P—?. **26,** ● 1.7? A—9.2 A; ≡ A. **28,** ⊕° 6.3 P—6.4 P. **29,** ⊕ 8.9 A—9.4 A; ● 10.4 A—4.2 P, 5.0 P—7.2 P. **30,** ⊕ 1.7 P—2.8 P; ●° 7.5 P.

JULY, 1902.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	39.9	44.5	55	54	59	52	11.0	9.5	100	94	10	1	S 6	E 2	2.5
2	48.9	49.4	63	69	78	51	7.6	9.5	53	53	0	9	NW 7	W 2	.
3	46.4	38.7	68	61	69	57	13.6	13.1	91	99	10	4	S 6	NW 9	7.4
4	44.2	43.5	66	67	81	57	12.2	14.6	75	88	0	1	NW 5	S 4	.
5	41.8	42.3	65	64	76	62	14.6	9.8	94	66	10	10	NE 5	SE 3	0.5
6	46.1	50.1	59	55	69	55	11.8	10.6	95	98	10●	1	N 2	E 5	10.7
7	52.7	49.5	58	60	75	48	10.6	9.8	86	74	1	7	S 3	S 8	.
8	47.3	45.0	66	73	81	59	15.7	19.2	97	92	10●	1	SW 8	SW 6	2.0
9	44.5	42.0	75	77	88	68	17.4	16.8	79	70	6	9	W 5	SW 5	.
10	39.3	43.0	71	66	77	66	15.1	7.6	80	46	10●	3	NW 5	NW 9	8.9
11	46.5	47.1	64	67	75	54	8.8	7.6	59	47	0	0	NW 7	NW 2	.
12	46.9	44.7	66	67	80	58	9.8	11.8	61	74	1	0	W 5	SW 6	.
13	45.7	44.5	68	71	85	58	12.2	12.7	71	67	0	0	W 4	SW 7	.
14	45.5	43.4	72	76	89	62	13.1	16.8	68	73	2	8	SW 5	SW 5	.
15	41.5	38.6	72	60	84	59	17.4	13.1	85	100	3	9●	S 7	S 2	15.2
16	38.2	42.6	66	61	74	58	11.0	7.9	69	59	1	0	NW 8	NW 6	1.0
17	44.9	38.9	60	67	72	51	9.1	15.1	70	91	8	10	SW 2	S 10	0.0
18	41.7	46.3	67	66	74	66	11.4	13.1	68	81	6	7	W 7	W 5	0.0
19	48.0	45.2	60	58	66	58	10.6	12.2	81	99	10●	10	E 6	E 3	1.3
20	41.8	41.2	57	56	59	56	11.8	11.4	100	100	10●°	10	E 8	E 5	6.1
21	40.3	40.2	58	59	64	56	12.2	12.7	100	100	10	10	E 2	E 4	18.5
22	41.4	43.3	61	59	70	58	13.6	12.7	100	100	10	10●	N 3	NE 6	2.5
23	46.4	48.4	58	60	70	58	12.2	12.7	100	97	10	2	N 3	SE 3	0.3
24	50.0	49.6	61	56	67	56	13.1	11.0	99	98	8	3	E 3	E 6	.
25	50.2	50.3	58	57	63	55	12.2	11.4	100	98	10	10	NE 3	E 3	0.0
26	49.9	48.8	56	58	64	55	11.0	11.8	99	99	10●°	10	NE 3	NE 2	0.0
27	47.9	45.6	59	61	68	56	12.2	13.1	98	99	10	10	SW 3	S 5	0.3
28	43.0	43.1	72	74	81	61	19.2	15.7	99	73	9	4	W 6	W 7	.
29	43.8	45.0	73	64	79	64	17.4	15.1	83	100	7	10	NW 3	NE 6	2.8
30	45.6	46.7	67	62	72	61	14.1	13.6	84	96	8	4	NE 6	NE 5	.
31	47.7	46.9	69	69	84	61	15.7	12.2	88	70	0	1	NW 2	S 6	.
Means	45.1	44.8	64.0	63.7	74.0	57.9	12.8	12.0	84.9	83.9	6.5	5.6	4.8	5.1	80.0
'86-'02	44.8	44.2	67.5	66.8	78.1	60.2	13.9	13.6	80.5	81.0	5.3	5.3	5.1	6.1	98.8
Depart.	+0.3	+0.6	−3.5	−3.1	−4.1	−2.3	−1.1	−1.6	+4.4	+2.9	+1.2	+0.3	−0.3	−1.0	−18.8

REMARKS.

1, ● 3.8? A — 6.5? A, 8.3 A — 10.8 A, 1.7 P — 4.1 P; ≡ A — P. 3, ⊕° 4.9 A — 5.5? A; ●° 6.5 A; ● 6.8 A — 7.1 A, 8.0 A — 3.3 P; ●° 5.7 P — 6.7 P. 5, ● 5.6? A — 6.3? A; ∞ A — P. 6, ●² 3.6? A — 9.5 A. 8, ● 7.6 A — 9.0 A; ∞² A — P. 9, ∞² A. 10, ● 4.5? A — 5.7? A; ●° 7.6 A; ● 7.8 A — 11.4 A; ≡ A. 12, ∞ A — P. 13, ∞² A. 14, ∞² A — P; ≺ in E 9.9 P — 10.2 P — ?. 15, ∞² A; ∞ P; ⌐ 4.4 P — 9.1 P; ●° 4.5 P; ● 5.0 P — 5.7 P; ●² 6.8 P — 10.5? P; ≺ in NW and SE 9.3 P — 10.2 P — ?. 16, ●° 11.7 A. 17, ● 3.4 P — 3.6 P; T ? in N 3.4 P; ⌒² 3.5 P — 3.7 P; ⌐ in N 4.5 P — 5.7 P. 18, ● 0.9 P — 2.6 P; ⊕° 5.8 P. 19, ●° 6.6 A; ● 7.5 A — 9.7 A, 10.7 A — 1.5 P; ●° 6.1 P; ● 8.3 P —. 20, ●° — 7.2 P; ≡ A — P; ⌐ 9.9 P — 11.0 P; ● 9.6 P —. 21, ● — 0.5? A; ●° 8.8 A — 10.5? A, 12 M, 2.1 P; ● 8.9 P — 10.5? P; ≺ in W 7.9 P — 11.5? P — ?; ⌐ 9.0 P — 10.0 P; ≡ A, P. 22, ≡ A, P; ∞² A — P; T in W 4.7 P; ⌐ 5.7 P — 6.7 P; ● 5.8 P — 8.2 P. 23, ≡ A. 24, ∞ A. 25, ≡ A; ●° 10.4 A, 1.3 P, 2.4 P; ● 3.2 P — 5.0? P. 26, ≡ A; ●° 7.7? A — 9.4 A; ● 1.6 P — 2.7 P. 27, ≡ A; ●° 2.5 P, 4.3 P — 5.2 P. 28, ∞² A — P; ≺ in SW 9.1 P — 9.8 P — ?. 29, ∞² A — P; ⊕° 11.2 A — 11.5 A; ⌐ in S 2.3 P — 4.6 P; ● 2.2 P — 3.1 P, 4.3 P — 6.0 P. 30, ∞² A — P; ⊕ 0.8 P — 2.0 P.

AUGUST, 1902.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	46.2	44.8	69	69	80	63	11.8	16.2	66	91	7	10	S 4	S 5	0.0
2	44.5	43.5	68	73	84	63	17.4	19.9	98	96	7	6	SW 3	SW 5	2.3
3	43.4	41.2	72	71	86	66	16.8	17.4	84	89	2	9	S 2	S 7	.
4	40.4	41.2	70	67	85	65	16.8	15.7	91	92	5	6	W 4	NE 3	21.1
5	43.0	42.9	64	63	69	63	15.1	14.6	100	100	10	10	NE 4	SE 2	.
6	40.2	36.1	64	62	71	62	14.6	13.6	99	98	10	10	SE 6	NW 5	2.5
7	35.8	38.8	63	63	74	59	11.8	8.8	82	60	2	1	W 7	W 9	0.8
8	37.9	40.4	62	65	77	56	13.1	11.0	96	70	10●	0	S 10	W 8	8.1
9	44.8	47.1	65	69	78	56	12.2	11.4	76	62	1	1	W 4	W 3	.
10	49.3	47.7	70	65	79	60	11.8	10.6	63	69	1	9	N 1	SE 8	.
11	43.9	40.8	71	71	78	62	19.2	19.2	100	98	10	10	S 8	S 10	9.7
12	42.6	45.0	64	59	74	56	11.3	7.3	78	58	0	0	NW 8	NW 10	13.2
13	47.3	46.7	56	61	70	47	7.0	7.9	62	60	0	3	NW 9	NW 5	.
14	46.7	45.2	62	65	75	55	9.5	11.4	67	73	3	4	NW 2	SW 4	.
15	43.1	40.5	67	66	79	56	12.7	12.7	75	77	1	7	W 3	NW 7	0.0
16	40.3	40.1	54	59	67	53	7.9	7.9	77	61	6	0	N 3	NW 6	.
17	40.5	39.4	56	59	69	48	8.5	7.9	75	68	1	0	NW 5	NW 4	.
18	40.7	40.5	60	63	70	50	10.2	11.4	77	80	5	9	W 4	W 4	.
19	41.5	40.9	58	56	63	54	11.4	11.4	98	99	10●	1	N 3	NW 5	10.9
20	44.0	45.1	62	60	72	54	11.0	9.1	80	69	0	8	N 4	S 5	.
21	44.6	42.1	64	58	72	58	12.2	11.4	81	91	8	10	S 3	S 7	0.2
22	40.7	39.2	64	63	76	58	14.6	13.6	99	92	0	6	W 3	SW 5	.
23	39.1	43.5	60	56	70	53	10.6	11.0	81	92	4	3	NW 10	NE 4	0.0
24	45.0	45.1	59	60	65	52	11.0	11.4	87	85	2	8	NW 3	NW 3	0.0
25	44.9	43.0	62	60	70	55	11.0	11.4	78	87	0	3	NW 4	W 3	1.3
26	43.1	43.2	68	68	80	55	12.2	12.2	85	71	1	1	W 5	W 6	0.0
27	44.4	45.9	66	66	79	60	12.2	12.2	76	75	0	2	W 5	SE 3	.
28	49.2	51.1	63	57	69	57	9.8	11.4	67	96	3	0	NE 8	NE 4	.
29	51.8	50.5	60	60	71	54	11.8	10.6	88	82	5	4	NE 4	SE 4	.
30	50.4	48.6	64	62	80	59	12.2	12.7	82	88	4	0	W 5	S 5	.
31	47.5	45.4	64	67	83	61	15.1	16.8	100	99	10	0	SW 5	S 6	.
Means	43.8	43.4	63.4	63.3	74.7	57.1	12.4	12.3	82.7	81.4	4.1	4.5	4.8	5.3	70.1
'86-'02	45.0	44.6	65.1	65.2	75.9	59.1	13.6	13.4	83.7	82.6	5.5	4.7	5.1	5.8	99.7
Depart.	−1.2	−1.2	−1.7	−1.9	−1.2	−2.0	−1.2	−1.1	−0.1	−1.2	−1.4	−0.2	−0.3	−0.5	−29.4

REMARKS.

1, ●° 6.7 P — 6.8 P. **2,** ≡ A; ∞² A — P; ⌈⚡ 4.7 P — 5.8 P; ● 4.6 P — 4.9 P; ●° 5.1 P — 5.3 P; ● 7.8 P — 7.9 P; ⌒ 5.1 P — 5.3 P; ⚡ in E 8.7 P — 9.7 P. **3,** ∞² A — P; ⚡ in W 7.2 P — 11.3 P. **4,** ∞² A — P; ⌈⚡ in S 1.5 P — 2.9 P; ● 2.4 P — 2.8 P, 5.3 P — 6.0 P; ⌈⚡ in NW 3.2 P — 6.1 P; ⌒ 6.0 P — 6.2? P; ≡ in lowlands P; ⚡ in S 7.9 P — 9.3 P — ?. **5,** ∞² A — P; ≡ P. **6,** ● 7.5 A — 7.7 A; ●° 8.8 A; ● 9.0 A — 1.8 P, 2.8 P — 3.1 P, 8.4 P — 9.2? P; ≡ A, P; ⚡ in S and SW 7.8 P — 8.5 — ?. **8,** ⌈⚡ 6.9 A — 8.4 A; ● 7.0 A — 8.7 A; T in SE 10.5 A — 10.8? A; T in NW 11.1 A. **10,** ∞ A — P. **11,** ≡ A; ● 5.0? A — 6.7? A, 8.5 A — 8.7 A, 10.1 A — 10.6 A, 11.1 A — 11.5 A, 0.5 P — 0.8 P, 1.3 P — 2.8 P, 8.3 P — 9.7 P; T in W 1.2 P — 1.5 P; ⌈⚡ 7.7 P — 9.7 P. **14,** ⊕° 10.9 A — 6.2 P. **15,** ∞ A — P; ●° 4.4 P. **18,** ⊕° 7.2 A — 7.7 A; ●° 8.1 P — 8.2 P; ● 8.9 P — 11.5? P. **19,** ● 6.9? A — 2.4 P; ≡ A — P; ≡ in lowlands P. **20,** ∞² A. **21,** ∞ A — P; ● 10.9 A — 11.2 A, 11.7 A — 11.9 A; ●° 3.0 P, 3.1 P, 4.8 P — 5.0 P. **22,** ∞² P; ⚡² in N and NE 6.5 P — 10.0 P. **23,** ●° 1.9 P. **24,** ●° 2.9 P. **25,** ●° 0.4 P; ⌈⚡ in NW, W, E, 2.2 P — 2.9 P; ● 1.4 P — 1.6 P, 2.4 P — 2.9 P, 6.1 P — 7.4? P; T in N 6.2 P — 6.9? P. **26,** ●° 1.7 P; ● 3.2 P — 4.1 P. **27,** ∞ A; T in SW 5.1 P — 6.2 P. **28,** ∞ A — P in W. **29,** ∞ A — P in W. **30,** ∞² A — P. **31,** ≡ A; ∞² A — P.

SEPTEMBER, 1902.

Date.	Atmospheric Pressure, in mm. 700+ A.M. 8.00	P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure, in mm. A.M. 8.00	P.M. 8.00	Relative Humidity, in per cent. A.M. 8.00	P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00	P.M. 8.00	Precipitation, in mm. P.M. 8.00
1	44.6	42.5	68	69	89	65	17.4	18.0	100	97	3	6	SW 6	S 9	.
2	42.9	43.9	69	67	83	67	18.0	9.8	98	59	10	0	SW 4	NW 9	6.1
3	47.4	45.3	65	62	78	56	9.1	18.1	60	95	0	9	NE 2	S 6	.
4	40.4	40.4	66	61	78	61	16.2	9.1	100	68	10●	9	S 7	NW 6	7.4
5	45.1	50.4	56	54	64	51	8.5	6.0	78	59	0	0	NW 8	N 6	.
6	54.9	53.1	57	51	67	46	7.9	8.5	66	90	3	2	SE 3	SE 8	.
7	48.8	46.1	61	63	71	51	12.7	14.6	93	100	6	0	S 9	SW 6	6.6
8	47.8	47.0	62	63	79	58	11.4	9.8	82	73	0	0	SW 3	S 6	.
9	45.4	38.0	61	66	78	57	13.1	16.2	96	100	8	10●	S 8	S 14	4.6
10	40.2	44.8	55	57	69	55	8.5	9.1	91	77	7	0	NW 8	NW 6	2.8
11	48.5	49.2	56	57	72	49	8.5	11.0	73	91	0	3	NW 1	S 5	.
12	51.0	49.9	61	58	75	54	11.8	10.2	87	83	0	0	SW 4	S 7	.
13	46.7	44.4	65	64	67	55	13.6	15.1	87	100	10	10	SE 9	SW 7	6.1
14	47.5	48.3	51	54	64	47	7.6	6.5	80	61	0	0	NW 8	N 5	7.9
15	50.0	49.5	51	54	62	45	7.6	6.0	79	56	0	1	N 4	SE 1	.
16	51.5	52.5	52	57	66	46	7.6	8.2	79	70	6	4	N 5	E 2	.
17	53.4	53.4	55	55	66	51	10.2	11.0	95	100	6	10	NE 7	E 6	.
18	52.4	50.9	56	57	59	54	11.4	11.8	100	100	10	10●°	E 7	NE 5	0.0
19	50.5	50.7	59	62	71	57	12.7	12.7	100	91	10●°	10	NE 5	SE 7	12.5
20	52.7	53.0	59	58	62	57	12.7	12.2	100	100	10	10	NE 6	NE 5	0.0
21	53.6	51.9	56	56	60	55	11.0	11.4	97	100	10	10	NE 4	E 3	0.0
22	49.0	46.6	57	57	64	55	11.8	11.8	100	100	10	2	E 5	NE 3	.
23	45.0	42.5	68	63	76	55	15.1	13.6	88	98	0	0	NE 3	S 6	.
24	43.5	47.8	65	52	66	52	12.2	5.4	79	55	9	5	N 8	N 6	.
25	51.4	51.4	45	49	55	43	6.0	6.8	78	76	10	10	NE 4	E 4	.
26	50.3	47.5	51	55	57	47	8.5	11.0	91	99	10	10	SE 3	E 6	1.0
27	43.2	40.1	59	64	71	55	12.7	15.1	100	100	10●°	10	E 6	S 3	9.9
28	39.9	38.5	62	64	71	60	14.1	15.1	100	100	10	10●°	SW 3	SE 6	0.5
29	37.8	39.6	63	57	70	57	14.6	11.8	100	100	10	10	W 2	N 4	9.1
30	39.2	38.5	60	57	61	51	13.1	11.8	100	100	10●°	10●°	NE 7	N 7	0.2
Means	47.1	46.6	59.0	58.8	69.0	53.7	11.5	11.1	89.1	86.4	6.3	5.7	5.3	5.8	74.7
'86-'02	47.0	46.5	58.5	58.9	69.5	52.8	10.9	11.0	84.2	83.2	5.2	4.8	6.0	6.7	112.3
Depart.	+0.1	+0.1	+0.5	−0.1	−0.5	+0.9	+0.6	+0.1	+4.9	+3.2	+1.1	+0.9	−0.7	−0.9	−37.6

REMARKS.

1, ∞² A—P. **2**, ● 1.7? A—5.0? A; ≡ A; ∞² A—P. **4**, ≡ A; ●² 4.0? A—5.1? A; ● 7.7 A—8.3 A, 1.8 P—2.2 P, 3.7 P—3.8 P. **7**, ●° 7.0 A, 7.7 A; ● 9.4 A—10.5 A, 10.7 A—11.3 A, 0.1 P—0.9 P, 1.4 P—1.7 P; ⌒ 3.3 P—3.5 P. **8**, ∞² A. **9**, ≡ A; ∞² A—P; ● 3.8 P—5.8 P, 6.2 P—11.5 ? P. **10**, ●° 7.3 A. **12**, ∞² A; ∞ P. **13**, ∞ A; ●° 10.4 A—10.6 A, 11.1 A, 0.3 P—5.8 P; ≡ P; ●° 8.6 P—. **14**, ●—1.8 A. **15**, ∞² A; ∞ P. **16**, ∞² A; ∞ P. **17**, ∞² A—P. **18**, ∞² A—P; ≡ P; ●° 8.9 A, 10.8 A—11.0 A, 6.9 P—7.1 P, 7.4 P—. **19**, ●°—7.7 A; ● 7.7 A—2.5 P, 4.5 P—4.7 P; ≡ A. **20**, ≡ A—P. **21**, ∞² A—P; ≡ P; ●° A; ●° 4 P—6 P at Base Station. **22**, ∞² A; ∞ P; ≡ P. **23**, ≡² in lowlands A. **25**, ∞² A. **26**, ∞ in W A—P; ●° 9.5 A—11.4 A, 1.9 P—2.7 P, 10.7 P—. **27**, ●—1.3 P, 3.0 P—3.2 P, 5.7 P—7.7 P; ≡ A, P; ⌒² 3.0 P—3.2 P; ● 9.0 P—. **28**, ●—0.2 A, 2.7 P—2.8 P, 5.0 P—8.7 P; ≡ A, P; ∞² A—P; ⚡ 9.0 P; ⛈ 11.5 P; ● 10.0 P—. **29**, ●—6.0? A; ≡ A, P; ∞² A—P; ●° 7.2 P—. **30**, ●—9.5 A; ≡ A—P; ●° 5.2 P—5.7 P, 7.0? P—.

OCTOBER, 1902.

Date.	Atmospheric Pressure, in mm. 700+ A.M. 8.00	P.M. 8.00	Air Temperature, in degrees Fahrenheit. A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	Vapor Pressure, in mm. A.M. 8.00	P.M. 8.00	Relative Humidity, in per cent. A.M. 8.00	P.M. 8.00	Cloudiness. 0—10. A.M. 8.00	P.M. 8.00	Wind: Direction and Velocity in metres per second. A.M. 8.00	P.M. 8.00	Precipitation, in mm. P.M. 8.00
1	36.3	38.6	58	56	59	56	12.2	11.4	100	100	10●	10●°	E 7	N 6	11.9
2	43.1	45.4	58	64	72	56	12.2	12.7	100	85	10	9	N 3	SE 2	0.5
3	46.6	45.2	57	57	67	55	9.1	10.6	77	87	6	6	N 6	S 1	.
4	46.2	46.4	53	51	63	50	7.0	7.0	70	73	5	6	N 6	SE 5	.
5	45.8	40.3	51	57	58	50	7.0	11.8	75	100	10	10●	SE 7	SE 8	7.8
6	34.6	36.9	64	58	73	57	15.1	9.5	100	79	10	0	S 9	W 8	13.2
7	42.1	40.4	53	55	70	47	7.6	10.6	76	96	0	2	W 4	S 8	.
8	42.8	47.3	50	50	60	45	6.8	5.8	74	64	4	0	W 10	W 5	.
9	45.0	50.6	55	45	67	45	8.5	4.9	76	66	10	0	SW 8	N 7	.
10	54.8	51.3	38	43	57	33	4.0	5.6	68	82	0	0	NW 6	S 5	.
11	47.2	42.0	49	54	61	40	7.6	10.6	87	100	10	10●	SW 7	S 3	1.5
12	38.8	39.4	53	53	55	53	10.2	9.4	100	95	10●	2	NE 11	N 5	25.1
13	44.8	40.8	52	62	68	50	9.5	13.1	98	96	4	9	SE 7	S 13	.
14	39.3	41.5	60	47	65	47	11.8	5.4	88	67	10	1	W 6	NW 8	.
15	46.0	43.0	39	47	58	36	4.6	6.0	75	73	0	0	SW 4	SW 9	.
16	43.6	46.5	47	49	64	42	6.3	5.6	75	62	0	2	SW 5	NW 6	.
17	51.2	52.3	39	39	49	34	4.0	4.7	67	80	2	0	N 5	SE 7	.
18	53.5	49.6	42	53	58	39	5.4	9.8	80	96	10	10	SE 3	S 11	0.0
19	48.0	44.4	62	60	78	53	13.1	12.2	91	95	2	7	SW 9	S 11	.
20	44.2	44.2	57	51	63	51	7.3	4.0	61	44	0	0	NW 7	W 11	.
21	49.0	52.6	39	36	51	35	4.6	3.5	74	68	0	0	NW 7	NW 6	.
22	54.7	48.5	35	43	54	30	3.1	5.6	65	82	4	2	W 3	SW 10	.
23	46.4	52.4	46	41	49	41	7.6	4.4	97	68	10●	0	W 4	E 7	5.8
24	54.4	46.8	43	53	56	37	5.2	9.5	73	92	1	10	S 6	S 11	0.0
25	42.9	52.8	57	41	60	41	10.2	4.2	85	66	8	3	W 9	N 9	0.5
26	57.7	54.2	34	38	44	31	3.5	4.6	73	78	7	10	NE 4	SE 6	0.0
27	47.5	42.9	50	58	63	38	8.8	11.8	98	96	10	10	S 9	S 8	.
28	31.0	30.8	63	47	64	47	14.6	7.0	100	86	10●	1	S 16	W 10	48.8
29	38.1	46.8	37	34	47	34	3.8	3.5	72	71	2	2	W 7	W 7	0.0
30	56.2	54.3	30	41	48	28	2.9	4.9	72	77	0	10	W 4	S 6	.
31	52.4	54.1	43	39	56	39	5.2	4.7	75	80	0	0	SW 6	NW 9	0.0
Means	45.9	45.9	48.8	49.1	59.6	43.2	7.7	7.6	81.4	80.8	5.3	4.3	6.6	7.4	115.3
'86-'02	46.0	45.5	47.0	48.3	57.7	41.9	7.3	7.3	81.7	78.3	5.4	4.8	6.9	7.3	117.6
Depart.	−0.1	+0.4	+1.8	+0.8	+1.9	+1.3	+0.4	+0.3	−0.3	+2.5	−0.1	−0.5	−0.3	+0.1	−2.3

REMARKS.

1, ● — 8.3? P; ≡ A — P. 2, ≡ A. 3, ⊕° 8.5 A — 9.2 A. 4, ⊕° 7.7 A. 5, ●° 8.5? A, 2.8 P — 8.9 P; ≡ P; ●° 9.3 P. 6, ◍ — 6.9 A, 8.2 A. 7, ∞ A. 9, ∞² A. 10, ⊔² in lowlands A. 11, ⊕ 7.7 A — 9.2 A; ◍ 4.8 P —. 12, ◍ — 1.2 P, 2.5 P — 2.6 P; ≡ A. 13, ∞² A. 16, ∞² A — P. 17, ∞² A. 18, ◍° 7.6 A; ◍ 9.7 A — 9.9 A; ∞² A; ∞ P. 19, ⋖ in SW ? A; ∞² A; ⋖ in W and NW 8.9 P — 9.5 P. 23, ◍ 3.8? A — 11.2 A; ∞² A — P; ≡ in lowlands P. 24, ≡° in lowlands A; ⊔² in lowlands A; ◍° 5.6 P, 9.9 P — 10.5? P. 26, ◍ 7.8 P — 8.0 P. 27, ◍² 9.5 P —. 28, ●² — 1.8 P. 29, ⚹° 0.7 P, 1.5 P, 5.5 P. 30, ∞ A; ●° 8.1 P. 31, ∞² A — P.

NOVEMBER, 1902.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	56.4	55.0	34	39	47	31	3.6	5.4	75	90	0	0	N 4	SE 4	.
2	53.7	50.5	41	44	59	36	5.8	7.0	90	93	3	0	SW 5	S 6	.
3	48.9	47.5	43	49	63	39	6.8	8.5	100	96	8	6	SW 5	SW 7	.
4	49.9	49.9	43	43	55	38	6.5	7.0	91	100	0	10	N 7	E 3	.
5	50.2	49.1	38	44	52	36	5.8	7.3	100	100	10	4	S 4	S 6	.
6	47.2	42.8	48	57	64	43	8.5	11.8	100	100	10	10	S 9	S 5	0.0
7	44.3	49.2	50	39	59	39	8.2	3.5	90	57	9	0	NW 4	N 7	.
8	52.4	51.9	32	37	43	29	3.3	4.2	75	79	7	10	N 5	NE 5	.
9	50.2	45.0	34	42	42	30	4.6	6.0	95	87	10	10	N 7	N 9	.
10	42.7	46.1	43	47	66	34	1.8	5.8	28	70	0	4	NW 8	NW 9	.
11	53.4	53.1	31	37	47	29	2.5	4.2	58	73	4	10	NW 4	SE 5	.
12	46.7	43.6	46	57	61	37	7.6	9.5	99	78	10	10	S 12	SW 9	2.3
13	52.9	52.5	36	31	59	31	5.4	4.4	100	100	10●°	10●	NE 9	NW 4	1.8
14	49.2	48.2	44	51	66	31	7.3	8.8	100	94	10	0	SW 8	S 4	0.5
15	46.3	44.9	47	59	67	44	8.2	11.4	100	90	10	9	S 7	SW 7	.
16	48.4	49.5	48	47	59	47	7.0	6.3	82	77	1	5	NW 6	NE 5	.
17	51.4	52.7	43	39	47	39	6.5	5.4	94	89	10●°	10	NE 7	NE 5	.
18	52.4	50.2	37	43	46	36	5.4	6.5	94	93	10	10	N 5	E 6	.
19	48.1	48.4	42	41	46	40	6.5	6.5	95	100	10	0	N 3	NW 6	0.0
20	51.4	48.8	37	41	54	36	5.4	6.0	98	91	0	0	NW 5	S 5	.
21	45.1	42.3	40	52	58	38	6.0	7.3	97	75	7	9	W 7	W 6	.
22	39.1	29.1	48	52	62	45	7.6	9.8	88	100	4	10●	SW 7	SW 13	0.8
23	34.3	39.9	35	29	52	29	3.3	1.7	66	48	2	0	W 10	SW 7	0.5
24	35.7	34.9	40	51	54	28	3.8	3.6	62	41	8	10●	SW 13	SW 8	0.0
25	37.7	42.0	43	42	51	41	5.4	3.8	78	58	10	10	NW 7	NE 5	1.0
26	37.6	34.1	37	31	44	31	5.6	4.2	100	99	10●^{2}	10●°	E 12	N 8	24.9
27	35.2	30.9	31	33	40	29	4.4	4.7	100	100	10●°	10	NE 6	NW 7	2.0
28	33.0	43.9	32	26	36	26	2.6	1.8	61	57	3	0	W 13	NW 14	.
29	54.5	54.3	25	35	46	21	1.9	3.5	59	68	1	3	NW 8	S 10	.
30	49.8	45.6	41	41	48	33	4.6	3.3	70	56	8	10	W 6	W 4	0.0
Means	46.6	45.8	39.6	42.6	53.1	34.9	5.4	6.0	84.8	82.0	6.5	6.3	7.1	6.6	33.8
'86-'02	45.6	45.2	36.6	38.8	47.3	31.8	4.7	4.9	80.2	75.7	6.0	5.3	7.6	7.6	110.2
Depart.	+1.0	+0.6	+3.0	+3.8	+5.8	+3.1	+0.7	+1.1	+4.6	+6.3	+0.5	+1.0	−0.5	−1.0	−76.4

REMARKS.

1, ∞^{2} A—P. **2,** ≡° in lowlands A; ∞ A—P; ⊕° 1.6 P—1.8 P. **3,** ≡ A; ≡ in lowlands A; ∞^{2} A—P. **4,** ≡ in lowlands A, P; ≡ P. **5,** ≡ A—P; ∞^{2} A—P. **6,** ≡ A—P; ●° 9.7 A, 1.1 P, 1.9 P—2.3 P, 2.5 P—2.6 P. **7,** ∞^{2} A; ⊕° 8.5 A. **8,** ∞^{2} A; ⊕° 3.1 P—3.3 P; ◒^{2} 5.8 P—9.6 P—?. **9,** ∞^{2} A; ⊕ 8.0 A—1.2 P. **10,** ∞^{2} A—P. **11,** ∞^{2} A—P; ● △ 9.0 P—9.7 P. **12,** ● 4.2? A—6.8? A, 1.4 P—1.5 P; ≡ A; ∞ A—P; ⊕° 2.0 P. **13,** ≡ P; ●° 4.2? A—. **14,** ●°—1.0? A; ≡ A; ∞^{2} A—P. **15,** ≡ A; ∞^{2} A—P. **16,** ∞^{2} A; ◒ 6.2 P—10.0 P—?.

17, ●° 0.5? A—9.5? A. **18,** ∞^{2} A. **19,** ●° 2.2 A, 8.7 A, 9.2 A, 9.5 A; ∞^{2} A—P. **20,** ⊔^{2} in lowlands A; ∞^{2} A—P. **21,** ∞●^{2} A—P. **22,** ∞^{2} A—P; ⊕ 1.7 P—2.2 P; ●° 6.0 P—8.6 P. **23,** ✳ 9.2 A—9.5 A, 10.4 A—10.6 A. **24,** ●° 8.2 A, 10.1 A, 10.5 A; ∞ A—P; ● 7.9 P—11.5? P. **25,** ∞^{2} A—P. **26,** ≡ P; ∽° P; ●^{2} 3.3? A—. **27,** ●°—9.4 A; ●^{2} 9.4 A—9.7 A; ● 2.9 P—4.4 P; ≡ A—P. **29,** ∞^{2} A—P. **30,** ∞ A—P; ●° 7.2 P; ● 8.2 P—9.7? P; ✳ 9.7? P—.

DECEMBER, 1902.

Date.	Atmospheric Pressure, in mm. 700+		Air Temperature, in degrees Fahrenheit.				Vapor Pressure, in mm.		Relative Humidity, in per cent.		Cloudiness. 0—10.		Wind: Direction and Velocity in metres per second.		Precipitation, in mm.
	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	Max. 8 P.M.	Min. 8 P.M.	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	A.M. 8.00	P.M. 8.00	P.M. 8.00
1	41.7	40.9	25	33	41	25	2.9	3.5	88	76	0	3	NW 8	W 8	7.1
2	41.7	42.5	30	42	47	28	3.0	3.6	76	57	5	6	W 7	N 2	.
3	34.1	33.5	40	43	46	38	6.3	7.0	100	100	10●	0	E 7	W 6	10.1
4	40.0	42.1	34	32	44	32	3.3	2.5	69	57	1	10	W 3	N 6	.
5	30.8	37.7	32	16	35	16	4.6	1.9	100	87	10*	3	E 14	NW 12	15.0
6	47.7	52.5	7	13	20	6	1.2	1.3	86	69	0	0	NW 7	NW 8	.
7	51.3	40.4	17	25	28	10	1.4	3.3	66	100	10	6	S 3	W 7	3.8
8	40.4	42.5	18	7	27	7	1.8	0.6	77	48	0	2	W 7	NW 13	0.0
9	49.5	52.7	−12	−5	7	−14	0.2	0.3	47	41	3	0	NW 10	NW 10	.
10	50.2	40.9	6	31	33	−6	1.1	2.9	84	69	10*	10	S 7	SW 11	0.2
11	48.7	49.6	22	15	33	15	1.4	2.0	55	97	9	10*	N 4	NE 3	1.3
12	48.9	53.1	16	19	20	14	2.1	2.3	98	91	10*°	10	N 9	N 6	3.8
13	50.6	45.1	23	11	24	6	3.0	1.6	100	95	10*	10*^{2}	NE 11	N 12	15.0
14	52.5	57.6	10	14	20	8	1.5	0.9	95	52	10*	0	N 10	NW 7	2.8
15	60.7	61.6	15	28	28	12	0.7	3.5	37	90	8	10	N 7	SE 4	0.0
16	53.4	39.5	34	50	51	27	4.9	9.1	100	100	10●	10	SE 13	S 18	11.9
17	37.4	39.2	34	32	52	30	4.6	2.6	93	62	10	8	W 8	SW 9	13.5
18	36.0	38.1	28	31	37	26	2.9	3.5	78	84	2	4	SW 8	NW 10	0.0
19	41.4	41.6	30	38	43	25	2.7	3.1	69	57	9	4	SW 9	W 9	.
20	49.9	56.1	26	29	39	25	2.0	2.1	62	55	2	4	NW 9	E 4	.
21	57.5	45.1	32	47	47	29	3.5	8.2	77	100	10	10	E 7	S 12	12.5
22	40.0	41.5	47	40	55	40	7.9	4.0	96	65	7	10	SW 7	NW 7	23.6
23	43.0	49.5	25	16	41	16	2.2	1.3	71	62	4	0	NW 12	NW 10	.
24	51.1	49.6	10	21	24	10	0.9	1.7	58	66	0	3	N 7	N 5	.
25	45.7	38.3	19	31	31	18	2.0	4.4	79	100	10	10*^{2}	NW 5	E 11	7.9
26	37.2	38.4	22	26	32	22	2.7	3.3	98	99	10	10	NW 4	SE 2	7.9
27	36.9	39.8	21	19	28	18	2.7	1.8	99	74	0	0	W 5	W 6	1.5
28	42.0	46.1	9	18	21	8	1.3	1.5	85	67	0	0	W 9	SW 8	.
29	50.1	44.6	17	37	37	17	1.7	5.6	78	100	2	10●	S 6	S 13	0.5
30	45.3	48.3	32	28	40	28	4.1	2.3	93	65	1	0	NW 7	W 8	1.0
31	50.2	50.0	21	29	36	20	2.0	1.6	74	44	0	0	W 8	W 8	.
Means	45.4	45.1	22.3	26.3	34.4	17.9	2.7	3.0	80.3	75.5	5.6	5.3	7.7	8.2	139.4
'86-'02	45.3	45.1	26.3	29.3	37.2	22.0	3.2	3.3	76.3	71.4	5.8	5.0	7.9	8.0	97.3
Depart.	+0.1	±0.0	−4.0	−3.0	−2.8	−4.1	−0.5	−0.3	+4.0	+4.1	−0.2	+0.3	−0.2	+0.2	+42.1

REMARKS.

1, ✱—2.5? A; ∞^{2} A in lower air; ⊠. **2,** ∞^{2} A—P. **3,** ●0.7? A—11.7 A; ●°2.5 P—5.5 P; ≡ A, P. **4,** ⊕ 11.7 A—2.2 P. **5,** ●1.7? A—5.0? A; ●△5.0? A—7.9 A; ✱7.9 A—6.2 P; ⊠. **6,** ⊠. **7,** ∞ A; ≡° in lowlands A; ✱9.1 A—5.2 P; ≡ P; ⊠. **8,** ✱1.5 P—2.1 P; ⊠. **9,** ⊠. **10,** ✱7.3 A—8.7 A, 9.4 A—11.9 A; ⊠. **11,** ∞ A—P; ✱6.1 P—; ⊠. **12,** ✱—6.5? P; ∞^{2} P; ⊠. **13,** ✱^{2} 4.1? A—; ⊠. **14,** ✱—9.3 A; ⊠. **15,** ∞^{2} A in lower air; ✱°4.2 P; ⊠. **16,** ✱1.3 A—5.7 A; ✱△5.7 A—6.5 A; ●6.5 A—; ≡ P; ⊠. **17,** ●—1.5? A; ✱°8.8 A—8.9 A; ⊠. **18,** ∞ A—P; ✱7.4 P—7.7 P; ⊠. **19,** ∞ A—P; ⊠. **21,** ∞^{2} in lower air A; ≡ P; ●△10.7 A—11.3 A; ●11.3 A—7.9 P, 11.0 P—. **22,** ●^{2}—4.8 A. **24,** ∞^{2} in lower air A—P. **25,** ∞^{2} A; ✱°8.8 A—11.1 A; ✱^{2} 11.1 A—; ⊠. **26,** ✱—2.0? A; ✱°0.2 P—2.1 P; ✱2.9 P—5.2 P; ⊠. **27,** ✱1.0 A—6.1 A; ≡ A; ∞^{2} A in lower air; ∞ P; ⊠. **28,** ⊠. **29,** ∞^{2} A in lower air; ∞^{2} P; ✱°1.5 P; ●°4.5 P—; ⊠. **30,** ●—0.3 A; ∞^{2} A; ⊠. **31,** ∞^{2} A; ∞ P; ⊠.

TABLE VI.

SUMMARY FOR 1902.

IN ENGLISH AND METRIC MEASURES.

$\lambda = 71° 6' 53''$ w. $\phi = 42° 12' 44''$ n. H=640 ft., or 195.1 m.

The correction to reduce to standard gravity of Lat. 45°, —.007 *in.* at 30 *in.*, or —0.18 *mm.* at 762 *mm.*, has not been applied to the barometer readings, which are corrected to 32° F., but are not reduced to sea level.

Month.	Atmospheric Pressure.								Air Temperature.			
	Mean Corrected to 24 Hours.		Maximum.			Minimum.			8 A.M.		8 P.M.	
	Inches.	Mm.	Inches.	Mm.	Date.	Inches.	Mm.	Date.	Fahr.	Cent.	Fahr.	Cent.
									°	°	°	°
January ...	29.323	744.8	29.92	759.9	29	28.41	721.5	12	20.0	−6.7	24.0	−4.4
February ..	29.059	738.1	29.55	750.7	1	28.04	712.3	17	22.0	−5.6	25.8	−3.4
March	29.217	742.1	29.84	757.9	15	28.39	721.0	2	37.1	2.8	38.7	3.7
April	29.193	741.5	29.61	752.2	29	28.55	725.2	1	43.4	6.3	44.4	6.9
May	29.287	743.9	29.79	756.6	31	28.81	731.9	27	53.1	11.7	53.5	11.9
June	29.193	741.5	29.81	757.3	1	28.56	725.4	26	60.4	15.8	59.7	15.4
July	29.323	744.8	29.63	752.7	7	29.01	736.9	15	64.0	17.8	63.7	17.6
August ...	29.264	743.3	29.60	751.9	29	28.93	734.9	7	63.4	17.4	63.3	17.4
September .	29.413	747.1	29.73	755.2	6	28.99	736.3	9	59.0	15.0	58.8	14.9
October ...	29.354	745.6	29.83	757.8	26	28.53	724.6	28	48.8	9.3	49.1	9.5
November .	29.366	745.9	29.79	756.6	1	28.70	729.0	22	39.6	4.2	42.6	5.9
December..	29.327	744.9	30.00	762.0	15	28.56	725.5	5	22.3	−5.4	26.3	−3.2
Year	29.277	743.6	30.00	762.0	29, I	28.04	712.3	17, II	44.4	6.9	45.8	7.7
1886–1902.	29.310	744.5	30.21	767.3	II, '87	27.90	708.7	II, '95	44.3	6.8	45.7	7.6
Departures.	−0.033	−0.9							+0.1	+0.1	+0.1	+0.1

Month.	Vapor Pressure.						Relative Humidity.			Cloudiness.		
	8 A.M.		8 P.M.		Mean.		8 A.M.	8 P.M.	Mean.	8 A.M.	8 P.M.	Mean.
	Inch.	Mm.	Inch.	Mm.	Inch.	Mm.	Per cent.	Per cent.	Per cent.	0—10.	0—10.	0—10.
January ...	.09	2.3	.09	2.4	.09	2.3	74.1	69.6	69.7	5.4	3.7	4.5
February ..	.09	2.4	.11	2.7	.10	2.5	74.8	72.9	71.9	5.2	5.3	5.3
March	.18	4.6	.19	4.8	.19	4.7	78.5	76.2	75.7	6.1	7.0	6.5
April	.20	5.0	.20	5.1	.20	5.1	71.7	70.2	68.9	5.6	6.3	5.9
May	.29	7.3	.28	7.0	.28	7.1	67.6	66.0	64.7	5.2	5.3	5.3
June	.40	10.1	.39	9.8	.39	9.9	74.9	74.2	72.3	4.7	6.2	5.5
July	.50	12.8	.47	12.0	.49	12.4	84.9	83.9	81.6	6.5	5.6	6.1
August ...	.49	12.4	.48	12.3	.48	12.3	82.7	81.4	79.0	4.1	4.5	4.3
September .	.45	11.5	.44	11.1	.45	11.3	89.1	86.4	84.6	6.3	5.7	6.0
October ...	.30	7.7	.30	7.6	.30	7.7	81.4	80.8	78.9	5.3	4.3	4.8
November .	.21	5.4	.24	6.0	.22	5.7	84.8	82.0	81.0	6.5	6.3	6.4
December..	.11	2.7	.12	3.0	.12	2.9	80.3	75.5	75.9	5.6	5.3	5.4
Year	.27	7.0	.27	7.0	.27	7.0	78.7	76.6	75.3	5.6	5.5	5.5
1886–1902*	.28	7.1	.28	7.1	.28	7.1	77.8	75.4	74.3	5.7	5.2	5.4
Departures.	−.01	−0.1	−.01	−0.1	−.01	−0.1	+0.9	+1.2	+1.0	−0.1	+0.3	+0.1

* 1891–1902 Vapor Pressure and Gales.

Features of the Months. — A warm spring, a cool summer, a warm autumn, and a cold December. The warmest March in more than 50 years, and also the warmest November, with the exception of 1886, in 50 years. The coolest July since 1867. February, March, June, and December were wet; May, September, and November were dry, the November rainfall being the smallest for November since 1890. The atmospheric pressure in February was decidedly below normal, but was not so low as in 1901. The mean relative humidity was the lowest for May in 18 years.

TABLE VI.

SUMMARY FOR 1902.

IN ENGLISH AND METRIC MEASURES.

h_t = 6 ft., or 1.8 m., in summer, and 16 ft., or 4.9 m., in winter. h_r = 1 ft., or 0.3 m.

Month.	Air Temperature.														
	Mean Corrected to 24 Hours.		Mean Max.		Mean Min.		Mean of Max. and Min.		Maximum.			Minimum.			
	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Date.	Fahr.	Cent.	Date.
	°	°	°	°	°	°	°	°	°	°		°	°	
January ...	23.2	−4.9	31.7	−0.2	16.3	−8.7	24.0	−4.4	50	10.0	27	1	−17.2	1
February ..	25.2	−3.8	33.0	0.6	18.9	−7.3	25.9	−3.4	49	9.4	27	7	−13.9	5
March	39.0	3.9	49.1	9.5	33.2	0.7	41.1	5.1	66	18.9	12	22	− 5.6	19
April	45.0	7.2	55.4	13.0	37.4	3.0	46.4	8.0	76	24.4	23	30	− 1.1	1
May	54.4	12.4	66.7	19.3	45.5	7.5	56.1	13.4	88	31.1	23	31	− 0.6	10
June	60.9	16.1	73.0	22.8	51.9	11.1	62.4	16.9	90	32.2	3	44	6.7	9
July	64.8	18.2	74.0	23.3	57.9	14.4	65.9	18.8	89	31.7	14	48	8.9	7
August ...	64.5	18.1	74.7	23.7	57.1	13.9	65.9	18.8	86	30.0	3	47	8.3	13
September .	60.2	15.7	69.0	20.6	53.7	12.1	61.3	16.3	89	31.7	1	43	6.1	25
October ...	50.3	10.2	59.6	15.3	43.2	6.2	51.4	10.8	73	22.8	6	28	− 2.2	30
November .	42.4	5.8	53.1	11.7	34.9	1.6	44.0	6.7	67	19.4	15	21	− 6.1	29
December..	25.5	−3.6	34.4	1.3	17.9	−7.8	26.1	−3.3	55	12.8	22	−14	−25.6	9
Year......	46.3	7.9	56.1	13.4	38.9	3.9	47.5	8.6	90	32.2	3, VI	−14	−25.6	9, XII
1886–1902.	46.2	7.9	55.4	13.0	38.6	3.7	46.9	8.3	97	36.1	VII,'96	−16	−26.7	II, '96
Departures.	+0.1	0.0	+0.7	+0.4	+0.3	+0.2	+0.6	+0.3						

Month.	Precipitation.					Number of Days with								
	Total Monthly.		Maximum Daily.			⊗✱	⊗✱	✱	▲	⊠	≡	Clear.	Cloudy.	≥20 Metres.
	Inches.	Mm.	Inches.	Mm.	Date.	≥.01 Inch.	≥1.0 Mm.	≥0.1 Inch.						
January ...	2.05	52.1	.73	18.5	22	12	6	9	0	0	5	9	10	3
February ..	5.73	145.5	1.70	43.2	17	13	8	9	0	0	7	9	9	2
March	6.75	171.5	1.63	41.4	1	13	12	4	0	0	8	4	14	4
April	2.81	71.3	.96	24.4	9	6	6	0	0	1	8	4	11	1
May	1.38	35.0	.36	9.1	1	11	8	0	0	1	4	6	9	1
June	3.78	96.0	.68	17.3	21	16	14	0	1	2	8	4	8	0
July	3.15	80.0	.73	18.5	21	15	12	0	0	6	9	5	15	1
August ...	2.76	70.1	.83	21.1	4	10	8	0	0	5	6	7	6	0
September .	2.94	74.7	.49	12.5	19	13	11	0	0	1	13	7	15	0
October ...	4.54	115.3	1.92	48.8	28	9	7	0	0	0	4	5	8	0
November .	1.33	33.8	.98	24.9	26	8	5	0	0	0	10	7	12	0
December..	5.49	139.4	.93	23.6	22	17	16	12	0	0	5	12	13	2
Year......	42.71	1084.7	1.92	48.8	28, X	143	113	34	1	16	87	79	130	14
1886–1902.	47.86	1215.6	5.92	150.4	X, '95	133	107	29	1	20	87	93	131	15
Departures.	−5.16	−130.9				+10	+6	+5	0	−4	0	−14	−1	−1

SPECIAL PHENOMENA. — Heavy rains and melting snow caused a flood in the Neponset during the first part of March, nearly equalling that of 1886. Unusually brilliant sunsets during the latter half of the year, particularly during October, November, and December. Ice disappeared from the neighboring ponds March 17, about 10 days earlier than normal, and reappeared December 6, about a week later than usual. The last frost occurred May 20, about two weeks later than normal, and the first September 6, about two weeks earlier than normal. First cherry blossoms observed April 26, six days earlier than normal, and first ripe blueberries June 20, three days earlier than usual.

TABLE VI.

SUMMARY FOR 1902.

Month.	Number of Hours Wind blew from							
	N.	NE.	E.	SE.	S.	SW.	W.	NW.
January	87	23	39	62	73	70	219	171
February	74	83	57	30	45	26	223	134
March	92	69	61	43	150	94	69	166
April	20	64	52	39	132	104	193	116
May	61	58	37	36	131	166	142	113
June	27	59	31	47	103	160	204	89
July	41	107	103	33	95	154	113	98
August	50	78	33	55	109	94	173	152
September	68	97	141	91	105	71	53	94
October	84	37	43	68	145	122	123	122
November	100	99	47	10	103	156	84	121
December	128	37	43	37	52	100	209	138
Year	832	811	687	551	1243	1317	1805	1514
1886–1902	878	843	573	544	1176	1463	1675	1611
Departures	−46	−32	+114	+7	+67	−146	+130	−97

TABLE VI.

SUPPLEMENTARY.

H_a = 34 ft., or 10.4 m. above ground.

Month.	Bright Sunshine.		Wind.					
			Mean Velocity.		Maximum Velocity.			
	Duration in Hours.	Per cent. of Possible.	Miles per Hour.	Metres per Second.	Miles per Hour.	Metres per Second.	Direction.	Date.
January	148.9	52	17.6	7.8	51	23	NW	1
February	152.7	53	19.8	8.8	58	26	W	3
March	161.6	45	18.2	8.1	49	22	NW	19
April	171.6	44	15.6	7.0	45	20	SW	26
May	249.6	57	14.8	6.6	45	20	W	9
June	269.1	61	15.0	6.7	43	19	W	3
July	202.1	45	11.9	5.4	45	20	W	15
August	254.6	61	11.7	5.2	36	16	S	11
September	148.6	41	12.7	5.7	34	15	S	9
October	184.6	56	16.2	7.3	38	17	S	28
November	122.4	43	15.4	6.8	43	19	NW	23
December	118.8	43	17.7	7.9	51	23	S	22
Year	2184.6	50	15.5	6.9	58	26	W	3, II
1886–1902	2168.2	50	14.8	6.6	72	32	SE	I, '93
Departures	+16.4	0	+0.7	+0.3				

N.B. — True wind velocities are recorded, which are about 18 per cent. lower than those recorded by a Robinson anemometer with the factor 3. The velocities for preceding years given here are corrected in the same ratio. The maximum velocity is for an interval of five minutes. No calms of an hour's duration were recorded, and there are none in the average from 1886 to 1902.

TABLE VII.

SUMMARY FOR 1902 AT THE BASE STATION.

$\lambda = 71° 7' 10''$ W. $\phi = 42° 18' 20''$ N. H = 210 ft., or 64 m. h_t = 6 ft., or 1.8 m. h_r = 1 ft., or 0.3 m.

Month.	Air Temperature, in degrees Fahrenheit.									Precipitation.			
	Mean Max.	Mean Min.	Mean of Max. and Min.	Mean Range.	Max.	Date.	Min.	Date.	Range.	Rain and Melted Snow.		Unmelted Snow.	
										Inches	Mm.	Inches	Cm.
January ..	33.3	17.2	25.2	16.1	51	27	4	4	48	1.96	49.8	11	28
February .	31.3	17.6	24.4	13.7	50	27	7	5	43	5.71	145.0	22	56
March ...	50.4	33.5	41.9	16.9	67	12	21	7	47	6.38	162.1	11	28
April	56.1	38.0	47.1	18.1	77	23	29	4	48	2.52	64.0	.	.
May	66.9	46.2	56.5	20.7	87	23	33	10	54	1.41	35.8	.	.
June	70.1	51.6	60.8	18.5	89	3	46	6	44	3.62	91.9	.	.
July	73.4	59.0	66.2	14.4	88	14	47	7	42	2.73	69.3	.	.
August ...	74.4	57.4	65.9	17.0	84	3	48	13	37	2.65	67.3	.	.
September	68.9	54.0	61.4	14.9	87	1	41	15	47	3.18	80.8	.	.
October ..	60.5	43.4	51.9	17.1	74	19	28	30	47	4.40	111.8	.	.
November	54.3	35.3	44.8	19.0	69	15	22	29	47	1.03	26.2	.	.
December.	35.6	18.6	27.1	17.0	57	22	−11	9	63	5.41	137.4	32	81
Year.....	56.2	39.3	47.8	16.9	89	3, VI	−11	9, XII	100	41.00	1041.4	76	193
1887–'02*.	56.7	39.4	48.0	17.3	95	VII, '98	−13	II, '96	108	48.39	1229.1	60	152
Departures	−0.5	−0.1	−0.2	−0.4						−7.39	−187.7	+16	+41

* The mean temperatures for 1892 and 1893 are missing.

N. B. — Under "Unmelted Snow," 0 indicates amounts less than 1 inch (2.5 cm.), and a dot (.) absence of snow.

TABLE VIII.

SUMMARY FOR 1902 AT THE VALLEY STATION.

$\lambda = 71° 7' 30''$ W. $\phi = 42° 14' 0''$ N. H = 50 ft., or 15 m. h_t = 6 ft., or 1.8 m. h_r = 1 ft., or 0.3 m.
After May $\lambda = 71° 7' 45''$ W. $\phi = 42° 14' 11''$ N. H = 60 ft., or 18 m.

Month.	Air Temperature, in degrees Fahrenheit.									Precipitation.	
	Mean Max.	Mean Min.	Mean of Max and Min.	Mean Range.	Max.	Date.	Min.	Date.	Range.		
										Inches	Mm.
January ...	33.2	13.5	23.3	19.7	50	27	−2	18	52	1.91	48.5
February ..	34.7	17.5	26.1	17.2	52	27	−1	24	53	5.04	128.0
March	50.3	33.2	41.7	17.1	66	30	19	7	47	6.08	154.4
April	57.3	37.3	47.3	20.0	76	29	27	4	49	3.07	78.0
May	68.8	43.8	56.3	25.0	89	23	30	14	59	1.82	46.2
June	75.4	50.9	63.1	24.5	92	3	42	6	50	3.22	81.8
July	76.6	57.1	66.8	19.5	92	14	44	2	48	2.85	72.4
August	77.9	53.4	65.6	24.5	89	4	39	17	50	2.26	57.4
September .	71.8	50.2	61.0	21.6	89	1	33	6	56	3.01	76.5
October ...	62.3	40.4	51.3	21.9	75	6	21	22	54	4.73	120.1
November ..	55.2	33.0	44.1	22.2	70	15	19	29	51	1.44	36.6
December ..	36.2	16.0	26.1	20.2	57	22	−13	15	70	6.65	168.9
Year	58.3	37.2	47.7	21.1	92	3, VI	−13	15, XII	105	42.08	1068.8
1889–1902 .	58.1	37.3	47.6	20.8	98	VII, '98	−22	II, '93	120	46.22	1174.0
Departures .	+0.2	−0.1	+0.1	+0.3						−4.14	−105.2

THE EFFECT OF METEOROLOGICAL CONDITIONS UPON AUDIBILITY.

By A. Lawrence Rotch.

The influence of atmospheric conditions on the propagation of sound has already been investigated, notably by Stokes, Reynolds and Tyndall in England and by Henry and Livermore in this country, but the opportunity at Blue Hill for daily observations of the variable effect of a stratum of air nearly six hundred feet thick, at the top and bottom of which there are meteorological stations, led to such observations being undertaken at the beginning of 1901.

The source of sound used was an eight-inch Crosby steam-whistle, situated upon a low building in the town of Hyde Park, the whistle being about 4400 metres north-northwest of, and about 170 metres below the Observatory. This whistle is blown, as a time-signal, twice a day, at 7 A.M. and 5 P.M., the steam being maintained at a nearly constant pressure of 100 pounds. Very often the escaping steam could be seen at the Observatory, so that the observer there had a warning to listen intently for the sound and during the later months he made some measurements of its velocity. It was deemed impracticable to employ as a standard source of sound, either a bell, fork, or reed with which to compare the intensity of the blast of the whistle and, therefore, a four-part mental scale was adopted as follows: 0 inaudible, 1^0 faintly audible, 1 distinct, and 1^2 very distinct. The observer usually was Mr. Sweetland, so that the personal equation was nearly constant. Whenever possible, the observer was at an open window facing the sound; when the wind was high its noise frequently deadened or obliterated the sound of the whistle. As is seen from Table IX, the number of observations, when the wind was above or below normal, was 623. The sound was heard distinctly in more than half of these, the number of very distinct, faint and inaudible observations being each nearly the same and about one-sixth of the whole number.

The lowest station of the Observatory, situated in the Neponset Valley, lies almost in a straight line joining the Observatory and the whistle and is nearly at the level of the latter. It is distant 2600 metres in an air-line from the Observatory.

Continuous records of temperature are maintained in the Valley, but, unfortunately, the record of relative humidity exists only for the first and last months of the year and no observations of wind-direction or velocity were made. Therefore it had to be assumed that the whole stratum of air moved in the same direction as was recorded at the Observatory and that its velocity increased from the ground upward at the rate of 1.9 metres per second for each hundred metres of ascent. This rate was deduced from 17 simultaneous anemometer records, obtained at the Valley and Observatory near the hours of 7 A.M. and 5 P.M., during the several seasons of the year 1902–03. The mean velocities were 4.5 and 7.8 metres per second, respectively, at the Valley and Observatory Stations, or a ratio of increase of 1.7 at the higher station over the lower one.

Osborne Reynolds showed, in Proceedings of the Royal Society for 1874, that the effect of wind upon sound, when blowing against it, is due to the lifting of the sound from the ground, caused by the different velocities with which the air moves at the ground and at an elevation above it. During a wind the air moves faster above than below, the effect of which is to refract or turn the sound upwards; so that the rays of sound which would otherwise move horizontally along the ground, actually move upwards in circular or more nearly hyperbolic paths and thus, if there is sufficient elevation, pass over the observer's head. Although barometric pressure does not effect the velocity of sound, yet the velocity depends on the temperature and every degree of temperature between 32° and 70° adds approximately one foot per second to the velocity of sound. The velocity also increases with the quantity of moisture in the air, but the quantity of moisture is at all times too small to produce an appreciable result. If the air were all at the same temperature and equally saturated with moisture, the velocity of the sound would be the same at all elevations, but if the temperature is greater, or if it contains more water below than above, then the wave of sound will proceed quicker below than above and will be turned up in the same way as against a wind.

Major Livermore in a report on fog-signal experiments, forming Appendix No. 5 to Report of the Lighthouse Board for 1894, calculates numerical results based on the foregoing assumptions. With a wind blowing directly against sound rays he finds the following tilting is produced at a distance of 2 nautical miles, which is slightly less than the distance of Blue Hill from the whistle. With a wind increasing one foot per second per hundred feet of elevation (0.9 metres per second per 100 metres) the ray of sound will rise 660 feet (201 metres) and with a wind increasing 2 feet per 100 feet (1.8 metres per second per 100 metres) it will rise 1330 feet, or 405 metres and with a wind of 3 feet (2.7 metres per second) it will rise 2010 feet

or 613 metres, etc. A difference of a degree Fahrenheit in temperature refracts a ray of sound as much as a difference in wind velocity of one foot per second. Thus at the distance of 2 nautical miles a fall of temperature of 1° per 200 feet (61 metres) of elevation turns the sound-ray upward 354 feet (108 metres) and a fall of 1° per 100 feet refracts it 708 feet, or 216 metres. The effect of vapor upon the transmission of sound is comparatively slight, and the refraction caused by it is very small compared with that which may be produced by either wind or temperature.

This theory attributes the causes of variations in audibility to vertical differences in the meteorological elements and accordingly the observations obtained at the bottom and top of the air-stratum through which the sound passed were discussed from this standpoint. Naturally, the wind is the first element which would be considered, although the idea that it greatly retards or accelerates the sound-wave cannot be entertained when the high velocity of sound is compared with the relatively moderate speed of the wind. Table IX gives the number of times that the various degrees of audibility accompanied different winds, the second vertical columns showing the percentages, and it is seen that the greatest audibility, if, as in the lower part of the Table, the distinct and very distinct cases are combined, occurs with west, north and northeast winds and the least audibility, the inaudible and faint cases being taken together, occurs with south and southeast winds. These latter, as would be expected, tilt the advancing sound waves upward so that they pass over the Hill, as Major Livermore's calculations show should be the case with a wind increasing at a rate exceeding 1.8 metres per second for each 100 metres of height and acting on sound rays emanating from a point about 4400 metres distant. It is evident that winds blowing from a northerly direction with a greater velocity above than below would, on the contrary, tend to depress the sound-wave and prevent it from passing high above the Hill. The nearly equal audibility with winds between west and northeast is not so easily explained, although it has been observed by other investigators, notably by De la Roche, who established by quantitative measurements, not only that sound has a greater range in the direction of the wind than in the opposite direction; but that the range at right angles is the maximum. Professor Stokes in a paper before the British Association in 1857, explained this effect as follows: Assuming that the difference of velocity tilts the sound-wave upward in a direction opposed to, and downward in a direction coincident with, the wind, in this latter case the direct wave is reinforced by the wave reflected from the earth. Now the reinforcement is greatest in the direction in which the direct and reflected waves inclose the smallest angle, and this is at right angles to the wind.

In Table IX the audibility has been classified according to whether the wind-velocity is above or below the normal velocity on the Hill, which is 8 metres per second. It is seen that for all winds there are more cases of audibility when the velocity is below normal than when it is above normal, which can perhaps be explained by the fact that high winds on the Hill are attended by such noises as would mask the sound of the whistle. Conversely, if this explanation is true, the number of cases of inaudibility should be greater when the wind-velocity is above normal and this is seen to be generally so. In the case of winds of high velocity opposing the sound there would be the added effect of a greater tilting of the wave-front allowing less sound to reach the Hill.

TABLE IX.

AUDIBILITY AND WIND.

Audibility.	Velocity.	Wind on Blue Hill.																	
		N.		NE.		E.		SE.		S.		SW.		W.		NW.		Total.	
	Dep. Nor.	Ts.	P. c.	Ts.	P. c.	Ts.	P. c.	Ts.	P. c.	Ts.	P. c.	Ts.	P. c.	Ts.	P. c.	Ts.	P. c.	Ts.	P. c.
1^2	+	1	2	2	2	0	0	0	0	0	0	2	2	5	5	4	3	14	17
	−	4	8	16	20	9	17	1	3	1	1	13	14	29	27	23	17	96	
1	+	9	18	21	26	4	7	0	0	8	10	13	14	23	22	35	25	113	51
	−	30	60	30	37	22	41	13	33	14	18	27	29	36	34	41	29	213	
1°	+	1	2	7	9	0	0	0	0	5	6	5	5	5	5	14	10	37	16
	−	2	4	2	2	8	15	16	40	19	24	15	16	3	3	3	2	68	
0	+	1	2	2	2	5	9	4	10	20	25	15	16	2	2	17	12	66	16
	−	2	4	1	1	6	11	6	15	13	16	3	3	3	3	2	1	36	
1^2+1	±	44	89	69	85	35	65	14	35	23	29	55	59	93	88	103	75	436	68
$1^\circ+0$	±	6	11	12	15	19	35	26	65	57	71	38	41	13	12	36	25	207	32

To study the effect of variations of temperature it was necessary to ascertain the normal differences of temperature between the summit of the Hill and the Valley. A discussion by Mr. Clayton of the differences of temperature between the Summit and the Base, will be found in the Appendices to Part I of Vol. XX of the Annals. The temperature at the Valley is usually the higher, but as inversions of temperature are common, that is to say, a lower temperature in the Valley, the average difference does not represent the normal so well as the most frequent difference. To obtain

this, all differences of temperature between Valley and Hill at 7 A.M and 5 P.M. were tabulated, and the most frequent difference at 7 A.M. was found to be 2°.2, and at 5 P.M. 2°.8. These figures are assumed to be the normal diminution of temperature between the bottom and top of a stratum of air 180 metres thick, and represent a decrease of 1° per 82 metres of ascent and 1° per 64 metres, respectively.

Table X shows the audibility in relation to temperature-differences below or above normal, and while distinct and very distinct observations occur one and a half times oftener with temperature differences below normal, yet nearly the same ratio obtains in the distribution of all these differences above and below normal. For inaudibility and faint audibility combined, the number of cases of differences above

TABLE X.

AUDIBILITY AND DIFFERENCES OF TEMPERATURE.

Dep. from Norm. Temperature Difference.	Audibility.				Total.
	0	1°	1	1²	
−	62	52	209	76	399
+	47	62	142	43	294

and below normal is almost exactly equal. To ascertain more conclusively whether the temperature exercises any effect, a table was constructed embracing all the audibility observations made with a northwest wind of nearly normal velocity (6 to 8 metres per second) and the corresponding differences of temperature. In this way the effect of the wind became constant and it was found that out of 51 cases, 33 had a temperature-difference below normal and 18 above normal. Now the distribution of the cases on the scale of audibility was almost in the same proportion, viz. for distinct and very distinct, 29 cases with a temperature-difference below normal and 18 cases with it above normal. There were only 4 cases when the whistle was inaudible or faintly audible, the northwest wind, as already seen, being favorable to audibility. It would appear, therefore, that difference of temperature has no effect upon the audibility, although the normal difference of 2°.5 between the Valley and the Hill (1° per 72 metres), according to Major Livermore's calculation, should deflect the horizontal sound-wave only about half-way up the Hill, and there are many larger temperature differences that ought to produce a greater deflection.

It appeared probable that during the inversions of temperature which often occur in winter and autumn, their frequency for the year being 20 per cent, the audibility

might be increased, owing to the fact that if the sound-wave moves more slowly in the cold stratum of air near the ground, its front would be prevented from rising into the upper air, in the same way as when depressed by a wind blowing from the source of sound. Accordingly Table XI was formed with different degrees of inversion and the scales of audibility as arguments. While it does appear from this Table that great audibility accompanies the large inversions of temperature, the effect of wind must be considered. Usually, when inversions occur, the velocity is light and the direction is southwest, west or northwest, of which the first is an unfavorable wind for audibility and the last is a favorable one, as shown in Table IX. Classifying the inversions according to the winds in which they occurred, it was found that with a southwest wind the percentage of distinct and very distinct observations taken together was 63 percent, of the whole number of 28 cases, and that the inaudible and faint observations together constituted 37 per cent. With northwest winds the percentages were 85 and 15, respectively, of the 21 cases. These ratios correspond closely to those for the same winds in Table IX, which includes differences of temperature above and below normal.

TABLE XI.

AUDIBILITY AND INVERSIONS OF TEMPERATURE.

Temperature Inversion.	Audibility.				Total.
	0	1^0	1	1^2	
0° – 5°	9	12	54	16	91
6° – 10°	1	1	16	5	23
11° – 15°	0	0	5	7	12

It is concluded, therefore, that inversions of temperature do not increase the audibility. Although the amount of water-vapor in the air has, theoretically, only a slight effect in deviating the sound-wave, yet the proof of this was sought in the observations. Therefore, the simultaneous records of relative humidity that were maintained at the Observatory and at the Valley Station during six weeks in the winter and during four weeks in the late autum were tabulated and their differences obtained. Table XII was then constructed, giving the audibility with successive differences of 10 per cent in the relative humidity, both when the humidity was higher in the Valley than on the Hill, which is the normal condition, and when the humidity was lower in the Valley. As in Table IX, the percentages of frequency

are here given in columns adjacent to the number of times. The cases of audibility, for a difference of 0 to 10 per cent, of humidity between the two stations, are almost precisely the same, whether the humidity was lower in the Valley or vice-versa. This limited number of observations indicate that the greatest audibility is when the relative humidity decreased rapidly upward, which also is when the temperature increased with altitude. These inversions of temperature have been shown previously to accompany distinct audibility although they were not assigned as its cause. Consequently, an atmosphere with nearly uniform humidity vertically does not appear conducive to good audibility, nor do our observations give any sign that the falling of rain or snow, rendering the air more homogeneous, appreciably alters its capacity to transmit sound. Tyndall came to the same conclusion, although Derham, in a celebrated paper in the Philosophical Transactions for 1708, asserted that rain, and especially snow, tended powerfully to obstruct sound. The general deduction from the Blue Hill observations is that the direction of the wind preponderates over the other elements in influencing the audibility, for the reasons stated.

TABLE XII.

AUDIBILITY AND DIFFERENCES OF RELATIVE HUMIDITY.

Audibility.	Humidity. Valley — Hill.						Hill — Valley.				Total Times.
	0—10 P. c.		11—20 P. c.		21 P. c. +		1—10 P. c.		11 P. c. +		
	Times.	P. ct.	Times.	P. ct.	Times.	P. ct.	Times.	P. ct.	Times.	P. ct.	
1^2	5	12	6	33	2	50	5	12	0	0	18
1	24	56	12	62	2	50	23	54	0	0	61
1^0	4	9	1	5	0	0	7	17	1	100	13
0	10	23	0	0	0	0	7	17	0	0	17

As has been said, measurements of the velocity of sound were made during the latter half of the year, when during the daylight observations the air was sufficiently clear to permit the jet of steam issuing from the whistle to be seen. The time elapsing until the arrival of the sound was measured, in the later observations with a stop-watch, but, nevertheless, no great precision was obtained. 12 measurements were made in temperatures between 0° and 30° and 25 measurements in temperatures between 30° and 60°. The average time of transmission for the first set was 13.23 seconds and for the second set 12.48 seconds. Assuming the shortest distance between the whistle and the Observatory to be 4350 metres, the velocity of the

sound was 329 metres per second in a mean temperature of 15°, and 347 metres in a mean temperature of 45°. This increase of 18 metres per second for an augmentation in temperature of 30°, or at the rate of 0.60 metre per 1°, is, however, nearly twice that determined from more precise measurements of the effect of temperature on the velocity of sound. These measurements, when grouped according to the wind-directions in which they were made, show a greater velocity for north and northwest winds, i.e., those blowing from the whistle, and a less velocity for west and southwest winds. Although the latter winds had a mean temperature greater by 8° than that of the north and northwest winds, and therefore, the velocity of the sound should have been greater had this cause acted alone, the resultant effect of the winds blowing more or less against the sound-wave was to retard it and the effect of the wind blowing with the sound-wave was to accelerate it. The difference in velocity between the two groups of winds amounted to 5 metres per second, which may be supposed to be the sum of an acceleration of about 3 metres per second, due to north and northwest winds, and a retardation of about 2 metres caused by the west and southwest winds blowing obliquely against the advancing sound-wave. If to this velocity of 3 metres there is added a correction for the difference in temperature of the two winds, there will be a fair agreement with the average velocity at which the stratum of air covering the ground to a depth of 180 metres is supposed to move, namely a velocity of 6 or 7 metres per second.

The reduction of the observations here discussed was begun by the late Mr. Sweetland and has been kindly completed by Mr. W. G. Riley, of Washington, D.C.

APPENDIX C.

RESULTS FROM THE KITE-METEOROGRAPH AND SIMULTANEOUS READINGS AT THE EARTH'S SURFACE. 1897–1902.

By H. Helm Clayton.

In the first column of Tables XIII and XIV under the head of Date and Hour are given the year, date, hour and minute of each set of values read from the records of the kite meteorograph at the heights given in column 2, and of the simultaneous readings from the instruments at certain fixed stations. The hour and minute is the time of the 75th meridian, five hours west of Greenwich.

In the second column of the table are given the heights, in metres above mean sea-level, at which the readings in the third to sixth columns were obtained. The heights of the kite-meteorograph are measured from the kite-reel on Blue Hill and corrected to sea-level by adding 192 metres, the altitude of the kite-reel above sea-level. The sea-coast is about ten kilometres northeast of Blue Hill and the plains surrounding the Blue Hills are from twelve to seventy metres above sea-level. The heights of the kite carrying the meteorograph are computed from readings of the angle of the kite above the horizon and from the length of line to the kite. A correction of the computed height is necessary on account of the sag of the line, and the amount was determined by simultaneous readings from the ends of a base line in 1896–97. The following corrections in percentages of the height were found to represent the observations as nearly as they could be by a simple formula, and were the corrections applied in obtaining the heights in the tables:—

Angular altitudes	17°	20°	23°	26°	29°	32°	35°	38°	41°	44°	47°	50°	53°	56°
Corrections in per cent. of height (minus)	3.2	3.0	2.8	2.6	2.4	2.2	2.0	1.8	1.6	1.4	1.2	1.0	0.8	0.6

It was found that the probable error of a single determination of height, after applying these corrections, was less than one per cent. (about 0.7). The kite-meteorograph was usually fastened to the wire below the upper kite, and a correction was applied to reduce the computed heights of the kite to that of the meteorograph. When the kites were not visible, as in cloudy weather or at night, the heights of the meteorograph were taken from the records of the aneroid barometer carried by the kites. The reading of this instrument was checked by comparing its readings, when the kites were visible, with the heights given by the angular measurements.

The third column gives the temperatures in degrees and tenths of degrees Fahrenheit at the heights shown in the second column. The values were read from the record of the kite-meteorograph and corrected for instrumental errors. The corrections were found by comparison with standard thermometers in a standard shelter, the comparisons being made before and after each flight under as uniform temperature conditions as possible. In order to avoid errors arising from the sluggishness of the instrument and to fix with certainty the coincidence in time between its record and the computed heights, the temperature readings were taken with few exceptions where the height of the kite had been nearly stationary for from two to five minutes. The record of the meteorograph is continuous, but as it is practicable to give the readings only at intervals, much care was taken to see that the change of temperature with change of height was uniform between the stages. Wherever there was evidence of an interruption in the gradient, readings of temperature, humidity, and wind were made both immediately above and below the position of the changed gradient. By reading the record in this manner all the places of inverted gradient or sudden shifts of gradient are brought out in the table.

The fourth column gives the values of the relative humidity in per cent. read from the record of a hair hygrometer in the kite-meteorograph and corrected by comparisons with a psychrometer before and after each flight.

The fifth column gives the direction of the currents in which the topmost kite floated as determined from azimuth readings, near the kite-reel, of the direction of the kite. When there are several kites on the line this method does not give the exact direction of the upper current in which the highest kite floats; but numerous comparisons with cloud movements at heights of from one to three kilometres showed no case in which the direction measured by means of the kite differed from the direction shown by the cloud as much as one of the sixteen points of the compass to which the directions are given.

In the sixth column is given the velocity of the wind recorded by the kite-meteorograph. The velocities are expressed in metres per second.

In columns seven, eight, nine, and ten of Table XIII are given the corrected records of the instruments at the Observatory made simultaneously with those at the kite. The dots in these columns serve the purpose of outlining and separating the different kite-flights.

In the seventh column of Table XIV are given the readings made with a sling thermometer on board of the ship, seven metres above sea-level.

Columns 11 to 20 in both tables contain a continuation of the data of the first ten columns.

TABLE XIII.

RESULTS FROM THE KITE METEOROGRAPH AND SIMULTANEOUS RECORDS AT THE GROUND. 1897–1902.

Stations at 15 and 195 metres are on the ground, and one at 78 metres, in the latter part of the Table, is on a tower.

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
Mar. 6.									
2:34 P	15	44.7	..	..	..	..	..	..	..
2:34 P	195	41.1	54	NW	10	..	..	..	..
2:34 P	304	37.4	56	NNW	..	41.1	54	NW	10
2:38 P	299	37.6	55	NNW	..	40.7	54	NW	9
2:53 P	630	32.8	57	NNW	..	40.3	53	NNW	10
2:56 P	590	33.6	57	N	..	40.1	53	NNW	11
3:01 P	571	33.6	57	NNW	..	40.0	53	NNW	11
3:19 P	312	35.0	48	NNW	..	38.4	46	NNW	10
3:30 P	567	31.1	45	NNW	..	37.7	43	NNW	10
3:42 P	605	29.2	44	NNW	..	36.3	42	NNW	12
4:01 P	315	31.0	43	NNW	..	35.4	43	NNW	11
4:01 P	195	35.4	43	NNW	11	..	..	..	..
4:01 P	15	38.9	..	..	..	..	..	..	..
Mar. 13.									
6:23 P	15	31.1	..	..	..	..	..	..	..
6:23 P	195	28.3	31	NW	10	..	..	..	..
6:23 P	616	21.5	31	NNW	..	28.3	31	NW	10
6:25 P	712	20.0	32	NNW	..	28.3	31	NW	9
6:25 P	195	28.3	31	NW	9	..	..	..	..
6:25 P	15	31.0	..	..	..	..	..	..	..
Mar. 16.									
2:57 P	15	23.2	..	..	..	..	..	..	..
2:57 P	195	20.3	35	NW	10	..	..	..	..
2:57 P	444	14.8	38	NW	..	20.3	35	NW	10
3:04 P	485	14.8	39	WNW	..	20.6	35	NW	10
3:32 P	488	15.2	40	WNW	..	20.5	35	NW	10
3:52 P	702	12.3	41	WNW	..	20.4	35	NW	10
4:11 P	858	9.1	43	WNW	..	20.1	34	NW	10
4:29 P	1113	5.5	43	..	..	20.0	34	NW	11
4:46 P	852	10.0	46	NW	..	19.9	34	NW	9
4:58 P	1277	1.0	49	NW	..	19.9	34	NW	9
5:10 P	1342	1.2	47	NW	..	19.7	34	NW	8
5:20 P	1359	0.2	45	NW	..	19.7	35	NW	10
6:24 P	1337	1.1	..	..	..	17.9	36	NW	9
6:39 P	1299	2.0	..	..	..	17.6	36	NW	7
6:53 P	834	6.0	..	..	..	17.2	38	NW	8
7:17 P	622	10.7	..	..	..	17.0	38	NW	9
7:31 P	452	13.2	..	..	..	16.8	39	NW	9
7:41 P	227	17.2	..	..	..	16.8	39	NW	10
7:41 P	195	16.8	39	NW	10	..	..	..	..
7:41 P	15	18.3	..	..	..	..	..	..	..
Mar. 23.									
1:51 P	15	49.4	..	..	..	..	..	..	..
1897.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
Mar. 23.									
1:51 P	195	46.0	62	ENE	8	..	..	..	..
1:51 P	243	44.6	61	ENE	..	46.0	62	ENE	8
2:11 P	356	43.5	64	NE	..	46.8	62	ENE	7
2:16 P	405	43.2	62	ENE	..	46.2	61	ENE	8
2:27 P	398	43.2	59	ENE	..	46.0	56	ENE	8
2:36 P	460	43.5	58	ENE	..	46.4	54	ENE	7
2:45 P	436	43.7	57	ENE	..	46.3	54	ENE	8
2:58 P	475	43.4	57	ENE	..	46.3	53	E	8
3:06 P	469	43.4	56	ENE	..	46,2	53	E	7
3:18 P	469	43.7	56	E	..	45.9	53	E	8
3:25 P	457	44.3	55	E	..	46.2	53	E	7
3:35 P	426	44.4	53	ENE	..	46.9	53	E	7
3:40 P	376	45.4	53	ENE	..	46.7	53	E	7
3:43 P	240	45.7	52	ENE	..	46.8	53	E	7
3:50 P	195	46.4	54	E	7	..	..	..	..
3:50 P	15	47.8	..	..	..	..	..	..	..
4:04 P	413	45.2	56	E	..	45.9	54	E	8
4:09 P	410	45.0	55	E	..	45.9	54	E	7
4:24 P	498	45.4	57	ENE	..	46.2	56	E	8
4:33 P	568	45.9	60	NE	..	46.2	57	E	7
4:42 P	524	43.4	60	ENE	..	46.2	57	E	7
4.54 P	577	43.1	60	ENE	..	45.2	61	E	7
5:09 P	666	44.4	61	ENE	..	43.9	62	ESE	8
5:11 P	746	43.4	61	..	..	43.8	62	ESE	8
5:14 P	599	44.6	60	..	..	43.6	63	ESE	8
5:17 P	712	44.4	58	..	..	43.3	64	ESE	8
5:19 P	504	44.4	59	E	..	43.8	64	ESE	8
5:21 P	422	44.6	57	E	..	43.1	64	ESE	7
5:32 P	235	42.3	63	ESE	..	43.3	66	ESE	7
5:32 P	195	43.3	66	ESE	7	..	..	..	..
5:32 P	15	43.6	..	..	..	..	..	..	..
Mar. 31.									
4:56 P	15	44.3	..	..	..	..	..	..	..
4:56 P	195	41.4	30	E	5	..	..	..	..
4:56 P	396	38.5	30	ESE	..	41.4	30	E	5
5:09 P	423	39.4	31	ESE	..	40.7	30	E	5
5:09 P	195	40.7	30	E	5	..	.	..	..
5:09 P	15	44.1	..	..	..	..	..	..	..
April 6.									
3:48 P	15	63.5	..	..	..	..	..	..	..
3:48 P	195	59.1	44	WNW	7	..	..	..	..
3:48 P	339	58.3	44	WNW	..	59.1	44	WNW	7
4:02 P	363	55.6	43	WNW	..	59.5	43	WNW	7

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897. April 6.		°F	p. ct.		m.p.s.	°F	p. ct.		m.p.s.
4:17 P	432	56.1	42	WNW	..	60.8	40	W	7
4:26 P	829	46.9	42	WNW	..	60.2	39	W	8
4:30 P	561	52.0	44	WNW	..	60.1	39	W	7
4:42 P	785	47.5	45	WNW	..	59.1	40	WNW	7
4:51 P	552	50.7	45	W	..	58.6	41	WNW	7
4:57 P	534	53.0	43	W	..	58.2	42	WNW	7
5:10 P	884	45.5	46	WNW	..	58.0	42	WNW	6
5:11 P	907	45.1	46	WNW	..	58.0	42	WNW	6
5:17 P	725	48.9	43	WNW	..	57.9	42	WNW	6
5:25 P	838	46.6	46	WNW	..	57.9	42	WNW	5
5:29 P	396	52.3	43	WNW	..	57.8	43	WNW	5
5:42 P	692	48.7	44	WNW	..	57.2	44	W	4
5:42 P	195	57.2	44	W	4	..	..	..	..
5:42 P	15	59.2	..	..	..	..	..	..	..
April 11.									
5:01 P	15	40.1	..	..	..	..	..	..	..
5:01 P	195	37.3	67	NW	8	..	..	..	..
5:01 P	385	34.1	68	NW	..	37.3	67	NW	8
5:04 P	418	33.8	68	NW	..	37.3	66	NW	7
5:27 P	411	34.7	66	NW	..	38.7	62	NW	6
5:30 P	708	30.8	66	NW	..	39.3	59	NW	7
5:42 P	922	25.9	66	NW	..	38.6	59	NW	7
5:44 P	990	25.9	68	NW	..	38.6	58	NW	7
5:52 P	1303	20.2	70	NW	..	38.5	58	NW	7
6:05 P	1424	19.0	82	NW	..	37.9	58	NW	7
6:14 P	1516	17.6	83	NW	..	37.5	58	NW	7
6:20 P	1559	16.8	83	NW	..	37.5	59	NW	5
6:25 P	1616	15.6	85	NW	..	37.3	59	NW	5
6:33 P	1602	17.3	87	NW	..	35.8	60	NW	5
6:41 P	1700	15.1	85	..	..	35.6	61	NW	5
6:55 P	1848	13.4	87	..	..	36.3	61	NW	6
7:02 P	1861	13.0	84	..	..	36.3	61	NW	6
7:07 P	1720	14.0	82	..	..	36.3	63	NW	6
7:45 P	1891	10.9	100	..	..	36.4	63	NW	7
8:33 P	1740	14.2	100	..	..	35.6	63	NW	6
9:06 P	1435	19.0	70	..	..	34.9	64	WNW	7
9:15 P	1370	20.2	70	..	..	34.4	65	WNW	7
9:36 P	1325	21.9	71	..	..	34.1	67	WNW	6
9:44 P	1325	22.3	65	..	..	34.0	67	WNW	6
9:58 P	1140	23.2	70	..	..	34.0	67	WNW	7
10:01 P	1155	22.8	67	..	..	34.0	67	WNW	7
10:09 P	940	26.2	65	..	..	33.9	67	WNW	7
10:25 P	417	29.8	62	..	..	33.7	68	WNW	7
10:27 P	232	35.2	60	..	..	33.5	68	WNW	7
10:27 P	195	33.5	68	WNW	7	..	..	..	..
10:27 P	15	33.3	..	..	..	..	..	..	..

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897. April 13.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
11:02 A	15	55.5	..	..	..	..	..	..	..
11:02 A	195	53.4	29	SSW	9	..	..	..	..
11:02 A	522	42.2	31	SSW	..	53.4	29	SSW	9
11:09 A	585	41.9	32	SSW	..	53.0	28	SSW	9
11:20 A	717	40.4	32	SW	..	53.1	28	SSW	9
11:26 A	706	39.0	32	SW	..	52.3	28	SSW	9
11:30 A	866	36.8	34	SSW	..	53.4	27	SSW	9
11:40 A	893	36.6	34	SSW	..	52.5	26	SSW	9
11:44 A	890	36.6	34	SW	..	52.5	26	SSW	10
11:47 A	972	35.2	34	SW	..	52.5	26	SSW	10
11:54 A	1263	31.6	37	SW	..	52.5	26	SSW	9
0:01 P	623	40.8	37	SW	..	52.5	26	SSW	9
0:10 P	985	35.2	37	SW	..	51.3	26	S	9
0:18 P	972	34.3	37	SW	..	51.3	26	S	10
0:33 P	1227	31.1	38	SW	..	51.1	26	SSW	9
0:45 P	1485	26.4	39	SW	..	49.9	27	SSW	12
0:56 P	1647	29.1	32	WSW	..	49.4	27	SSW	11
1:17 P	1884	31.6	21	WSW	..	49.0	27	SSW	7
1:35 P	1818	33.6	17	WSW	..	48.5	27	SSW	10
1:40 P	1912	32.3	15	WSW	..	48.9	27	SSW	9
1:54 P	2108	33.2	13	WSW	..	48.3	27	SSW	12
2:11 P	2172	33.2	12	WSW	..	48.3	27	S	12
2:15 P	2103	33.2	12	WSW	..	48.1	27	S	12
2:23 P	2056	33.2	11	WSW	..	48.1	27	S	13
2:48 P	1610	35.0	10	WSW	..	48.6	27	S	13
2:53 P	1627	36.6	10	WSW	..	48.8	27	S	11
2:54 P	1648	35.0	10	WSW	..	49.0	27	S	11
3:08 P	1511	31.4	9	WSW	..	48.9	27	S	13
3:22 P	1466	27.5	11	..	..	49.0	26	S	13
3:39 P	1200	29.4	31	SW	..	48.2	26	S	14
3:45 P	1070	31.4	36	SSW	..	48.2	26	S	14
3:57 P	958	32.9	40	SSW	..	48.8	28	S	13
4:19 P	600	39.0	46	SSW	..	47.9	36	SSW	11
4:19 P	195	47.9	36	SSW	11	..	..	..	..
4:19 P	15	51.2	..	..	..	..	..	..	..
April 16.									
3:53 P	15	66.0	..	..	..	..	..	..	..
3:53 P	195	62.6	32	SW	7	..	..	..	..
3:53 P	434	57.2	33	SW	..	62.6	32	SW	7
3:54 P	494	55.4	34	SW	..	62.6	32	SW	7
4:05 P	689	53.1	35	WSW	..	62.5	31	WSW	7
4:08 P	823	51.1	36	WSW	..	62.5	31	WSW	7
4:23 P	469	56.2	37	SW	..	62.3	32	WSW	7
4:36 P	803	50.9	39	SW	..	61.8	32	WSW	7
4:40 P	965	48.6	41	SW	..	62.3	32	WSW	7
4:58 P	993	48.2	42	SW	..	61.6	32	WSW	7
5:13 P	805	52.6	40	SW	..	61.4	32	WSW	6

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897. April 16.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
5:16 P	872	50.2	41	SW	..	61.3	32	WSW	7
5:26 P	1008	46.8	42	WSW	..	60.7	32	WSW	7
5:34 P	714	53.3	39	..	..	60.5	32	WSW	6
5:34 P	195	60.5	32	WSW	6	..	..	..	..
5:34 P	15	63.8	..	..	..	..	..	..	..
April 21.									
4:39 P	15	51.7	..	..	..	..	..	..	..
4:39 P	195	49.9	38	SSW	6	..	..	..	..
4:39 P	464	44.6	40	SW	..	49.9	38	SSW	6
4:48 P	514	44.1	43	SW	..	49.0	39	SSW	7
4:54 P	437	45.0	45	SW	..	49.1	39	SSW	7
5:00 P	668	42.1	46	SW	..	49.8	39	SW	7
5:30 P	705	42.1	46	..	..	49.8	39	SW	5
5:38 P	976	37.8	48	W	..	49.7	39	SW	5
5:50 P	927	39.0	48	W	..	48.0	44	SSW	4
6:03 P	1077	37.2	50	..	..	46.8	47	SSW	4
6:06 P	1111	36.9	51	..	..	46.7	47	SSW	5
6:19 P	1237	35.6	51	W	..	46.3	48	SSW	5
6:24 P	1373	34.0	52	WNW	..	46.0	49	S	4
6:35 P	1374	32.9	52	WNW	..	45.5	50	S	5
6:44 P	1420	35.3	44	WNW	..	44.5	52	S	4
6:50 P	1372	33.4	52	..	..	44.1	52	S	5
6:52 P	1320	34.2	53	..	..	44.0	52	S	5
7:11 P	1210	35.8	53	..	..	42.7	56	S	6
7:22 P	1045	37.6	52	..	..	42.2	60	S	5
7:45 P	980	39.0	50	..	..	41.6	61	S	5
8:03 P	767	42.3	48	..	..	41.5	63	SSW	5
8:21 P	796	41.6	47	..	..	40.9	63	SSW	5
9:00 P	676	43.5	46	..	..	40.7	64	SSW	5
9:19 P	500	46.1	44	..	..	39.7	67	SSW	4
9:21 P	290	46.1	43	..	..	39.5	67	SSW	5
9:21 P	195	39.5	67	SSW	5	..	..	..	..
9:21 P	15	43.5	..	..	..	..	..	..	..
May 1.									
3:16 P	15	44.1	..	..	..	..	..	..	..
3:16 P	195	41.1	100	E	8	..	..	..	..
3:16 P	544	36.9	100	E	..	41.1	100	E	8
3:32 P	550	36.9	100	ESE	..	40.5	100	E	8
3:50 P	868	51.8	99	ESE	..	40.6	100	E	9
3:54 P	1100	50.8	..	SE	..	40.5	100	E	8
4:07 P	1100	51.1	75	SE	..	40.3	100	E	9
4:19 P	1286	47.8	85	SE	..	40.3	100	E	8
4:35 P	1212	49.2	..	SE	..	40.2	100	E	9
4:41 P	1339	47.9	93	SE	..	40.2	100	E	9
5:00 P	1796	45.6	100	SE	..	40.0	100	E	11
5:13 P	1998	42.7	100	SE	..	39.9	100	E	8
5:20 P	2212	39.8	100	SE	..	39.8	100	E	8

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897. May 1.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
5:28 P	2241	39.7	100	SSE	..	39.9	100	E	8
5:33 P	2273	39.2	100	SSE	..	39.8	100	E	8
5:55 P	2462	35.8	98	SSE	..	39.4	100	E	9
6:05 P	2522	39.3	72	SSE	..	39.5	100	ENE	9
6:12 P	2347	37.6	100	SSE	..	39.3	100	ENE	9
6:25 P	2133	40.8	100	..	..	39.2	100	ENE	9
6:36 P	1832	42.9	100	..	..	38.9	100	ENE	9
7:05 P	1467	47.2	100	SE	..	38.7	100	ENE	9
7:12 P	1180	48.7	100	SE	..	38.7	100	ENE	9
7:21 P	924	50.5	98	SE	..	38.7	100	ENE	9
7:28 P	554	49.3	86	..	..	38.7	100	ENE	8
7:34 P	348	36.7	100	..	..	38.7	100	ENE	8
7:34 P	195	38.7	100	ENE	8	..	..	..	..
7:34 P	15	41.2	..	..	..	..	..	..	..
June 26.									
4:07 P	15	71.6	..	..	..	..	..	..	..
4:07 P	195	67.9	43	NW	10	..	..	..	..
4:07 P	445	64.1	45	NW	..	67.9	43	NW	10
4:16 P	524	62.6	46	NW	..	67.0	42	NW	13
4:29 P	459	63.5	45	NW	..	67.1	42	NW	9
4:46 P	726	57.2	49	NW	..	66.9	41	NW	11
4:57 P	814	55.6	53	NNW	..	66.8	42	NW	10
5:03 P	733	56.9	49	NNW	..	66.8	41	NW	10
5:12 P	914	54.5	48	NNW	..	66.9	41	NW	12
5:24 P	970	52.5	53	NNW	..	65.9	42	NNW	10
5:29 P	1164	49.1	60	NNW	..	65.8	43	NNW	11
5:34 P	1047	50.2	60	NNW	..	65.7	43	NNW	10
5:41 P	1190	48.4	64	NNW	..	65.7	42	NNW	9
5:47 P	1076	50.4	59	NNW	..	65.0	43	NNW	9
6:05 P	1373	44.6	64	NNW	..	64.7	45	NNW	8
6:11 P	1410	43.7	67	NNW	..	64.0	45	NNW	9
6:37 P	1874	37.4	73	NNW	..	63.7	47	NNW	9
6:46 P	1858	35.8	75	NNW	..	62.2	48	NNW	9
6:52 P	1953	34.2	77	NNW	..	62.0	48	NNW	8
6:58 P	1564	40.5	70	NNW	..	61.8	49	NNW	9
7:06 P	1965	34.0	73	NNW	..	60.7	50	NNW	8
7:12 P	2018	33.5	75	NNW	..	60.6	50	NNW	8
7:29 P	1780	36.5	70	NNW	..	59.6	50	NNW	7
7:37 P	1830	35.8	69	NNW	..	59.6	49	N	8
8:04 P	1635	37.8	77	NNW	..	58.7	49	N	8
8:22 P	1485	40.5	75	NNW	..	57.6	50	N	8
8:36 P	1366	42.5	70	NNW	..	57.4	50	N	7
8:53 P	1532	39.2	75	NNW	..	57.3	50	N	9
9:00 P	1452	40.7	73	NNW	..	57.2	49	N	9
9:15 P	1962	32.7	..	NNW	..	56.4	49	NNW	10
9:20 P	1902	33.0	81	NNW	..	56.3	49	NNW	9
9:30 P	1412	40.7	71	NNW	..	56.1	49	NNW	8

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897. June 26.		°F	p. ct.		m.p.s.	°F	p. ct.		m.p.s.
9:44 P	1237	43.2	63	NNW	..	55.5	50	NNW	9
9:56 P	1115	44.8	53	NNW	..	55.3	50	NNW	9
10:05 P	911	48.4	44	NNW	..	55.0	51	NNW	8
10:23 P	534	53.8	43	NNW	..	54.2	52	NNW	7
10:30 P	282	55.6	43	NNW	..	54.1	52	NNW	8
10:30 P	195	54.1	52	NNW	8	..	..	..	..
10:30 P	15	53.5	..	..	..	..	..	..	..
June 28.									
5:50 P	15	74.9	..	..	..	..	..	..	..
5:50 P	195	73.4	38	W	7	..	..	..	..
5:50 P	487	70.8	39	W	..	73.4	38	W	7
6:01 P	768	67.0	43	W	..	73.1	39	W	7
6:08 P	990	63.2	..	W	..	72.6	39	WSW	7
6:11 P	1061	62.9	50	W	..	72.5	39	WSW	7
6:18 P	1191	61.1	52	W	..	72.3	39	WSW	7
6:20 P	1216	60.9	54	W	..	72.3	40	WSW	7
6:30 P	1417	58.0	58	W	..	72.1	41	WSW	7
6:33 P	1440	57.7	60	W	..	72.0	41	WSW	6
6:43 P	1518	56.9	62	W	..	71.4	42	WSW	6
6:46 P	1600	54.8	64	W	..	71.2	42	WSW	6
6:56 P	1508	56.9	60	W	..	70.4	43	WSW	6
7:02 P	1469	57.3	60	W	..	70.2	44	WSW	6
7:30 P	1601	54.8	65	W	..	69.1	47	WSW	7
7:39 P	1555	56.0	63	W	..	69.0	47	WSW	7
7:58 P	1400	56.9	60	..	..	68.1	48	WSW	8
8:21 P	1327	58.0	59	..	..	65.9	57	SW	9
8:41 P	964	62.0	53	..	..	64.1	64	SW	8
8:54 P	700	65.0	51	..	..	63.7	69	SW	8
9:08 P	377	67.0	..	..	..	63.4	70	WSW	8
9:08 P	195	63.4	70	WSW	8	..	..	..	..
9:08 P	15	58.8	..	..	..	..	..	..	..
July 23.									
10:37 A	15	82.1	..	..	..	..	..	..	..
10:37 A	195	76.9	79	SSW	8	..	..	..	..
10:37 A	311	73.8	86	SSW	..	76.9	79	SSW	8
10:40 A	439	71.8	89	SSW	..	76.9	79	SSW	8
10:51 A	820	73.3	89	SSW	..	76.8	79	SSW	8
10:54 A	667	71.8	74	SW	..	77.8	76	SSW	8
11:00 A	579	70.4	92	SW	..	78.7	76	SSW	8
11:07 A	661	71.7	73	SW	..	78.7	75	SSW	8
11:11 A	878	69.3	64	SW	..	78.6	75	SSW	8
11:15 A	750	71.8	68	SW	..	78.6	75	SSW	8
11:22 A	983	68.4	67	SW	..	79.2	75	SSW	8
11:36 A	1159	65.2	68	SW	..	78.5	72	SSW	9
11:44 A	1212	65.2	61	SW	..	79.8	71	SSW	9
11:50 A	1253	65.0	64	SW	..	79.8	70	SSW	10
0:03 P	1231	65.2	61	SW	..	80.1	70	SSW	10

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897. July 23.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
0:16 P	1542	59.6	77	SW	..	80.8	67	SSW	9
0:31 P	1522	59.8	76	SW	..	80.4	65	SSW	11
0:37 P	1658	58.3	77	SW	..	81.0	65	SSW	9
0:50 P	1780	57.8	67	SW	..	80.5	64	SSW	12
1:00 P	1487	61.0	74	SW	..	80.2	65	SSW	11
1:14 P	1942	55.8	77	SW	..	80.8	65	SSW	11
1:27 P	2050	53.7	79	SW	..	80.0	68	SSW	12
1:40 P	2067	53.7	79	SW	..	80.1	68	SSW	11
2:00 P	1914	57.4	65	SW	..	79.6	70	SSW	11
2:10 P	2064	54.2	66	SW	..	79.7	72	SSW	11
2:24 P	1926	56.7	61	SW	..	78.7	73	SSW	11
2:31 P	2070	54.0	73	SW	..	79.6	74	SSW	9
2:36 P	2028	54.0	64	SW	..	79.7	74	SSW	9
2:45 P	1750	57.8	60	SW	..	79.4	73	SSW	10
2:58 P	2200	52.6	85	SW	..	79.0	72	SSW	11
3:03 P	2056	53.7	88	SW	..	79.2	71	SSW	11
3:21 P	1942	56.5	79	SW	..	78.9	70	SSW	12
3:40 P	1750	59.4	55	SW	..	78.3	72	SSW	11
4:10 P	2151	54.2	73	SW	..	75.8	77	SSW	11
4:15 P	2131	54.4	77	SW	..	75.0	79	SSW	12
4:34 P	1780	59.6	..	SW	..	74.7	83	SSW	10
4:45 P	1659	60.0	77	SW	..	74.5	85	SSW	9
4:47 P	1373	63.2	70	SW	..	74.4	87	SSW	8
5:08 P	1168	66.8	55	WSW	..	73.7	90	SSW	8
5:18 P	950	68.4	55	WSW	..	72.4	94	SSW	9
5:36 P	658	70.0	72	WSW	..	71.7	94	SSW	10
5:45 P	532	66.8	95	SW	8	71.4	96	S	9
5:45 P	195	71.4	96	S	9	..	..	..	..
5:45 P	15	75.9	..	..	..	..	..	..	..
July 26.									
2:37 P	15	62.6	..	..	..	..	..	..	..
2:37 P	195	59.0	74	ENE	8	..	..	..	..
2:37 P	734	51.4	70	ENE	..	59.0	74	ENE	8
3:11 P	802	50.2	77	ENE	..	58.6	76	ENE	8
4:03 P	454	53.2	79	ENE	..	57.5	78	ENE	8
4:03 P	15	61.2	..	..	..	57.5	78	ENE	8
4:19 P	714	51.6	50	ENE	..	57.4	80	ENE	8
5:02 P	846	50.9	75	ENE	8	57.4	80	NE	7
5:37 P	1077	49.6	65	E	..	56.7	84	ENE	6
6:20 P	991	50.0	80	E	8	55.9	89	ENE	9
7:11 P	1003	49.6	77	E	8	54.1	95	E	6
8:08 P	948	49.5	75	ENE	7	53.8	95	ENE	6
8:44 P	698	51.4	73	..	..	54.7	95	ENE	6
8:52 P	573	48.2	100	..	..	54.7	95	ENE	5
9:02 P	390	51.4	93	..	..	54.7	95	ENE	5
9:02 P	195	54.7	95	..	..	..	..	..	..
9:02 P	15	57.3	..	..	..	..	..	..	..

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.				Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.		Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897. Aug. 5.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.	1897. Aug. 17.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
11:37 A	15	62.7	..	..	..	..	..	..	..	5:49 P	1420	47.7	76	WNW	..	65.4	63	W	9
11:37 A	195	59.1	95	NE	6	..	..	..	..	5:53 P	1396	48.2	74	WNW	..	64.9	65	W	8
11:37 A	484	53.8	93	NE	..	59.1	95	NE	6	6:26 P	1190	53.1	71	WNW	..	63.9	70	W	8
11:55 A	457	53.8	92	NE	..	60.1	91	NE	7	6:56 P	855	56.2	66	WNW	..	62.7	72	W	8
0:17 P	733	53.6	76	NE	..	60.3	87	NE	7	7:17 P	1294	51.1	..	..	..	61.7	75	W	9
0:30 P	878	52.2	73	NE	..	62.2	85	NE	8	7:20 P	1464	49.1	..	..	..	61.4	75	W	9
0:55 P	1064	50.4	70	NE	..	61.3	80	NE	8	7:28 P	1704	45.9	69	..	..	61.0	75	W	9
1:00 P	1058	50.6	66	NE	..	62.1	79	NE	7	7:50 P	2005	40.5	80	..	..	60.6	79	WSW	8
1:12 P	1154	50.4	64	ENE	..	62.6	75	NE	8	8:10 P	2004	40.8	..	..	..	59.6	82	WSW	8
1:25 P	1327	48.4	60	ENE	..	63.6	73	NE	8	8:37 P	1765	42.8	..	..	..	58.9	83	W	9
1:48 P	1341	48.6	60	NE	..	65.0	72	NNE	6	9:22 P	1775	45.0	..	..	..	58.9	83	W	10
2:03 P	1348	48.6	58	NE	..	65.8	73	NNE	8	9:27 P	1830	45.5	54	..	..	58.9	83	W	10
2:31 P	1473	47.0	58	NE	..	66.2	70	NE	6	9:56 P	1584	47.0	54	..	..	58.9	82	W	11
2:43 P	1501	46.8	57	NE	..	66.9	68	NE	6	10:22 P	1545	47.3	..	..	..	58.0	82	W	9
3:10 P	1648	44.6	59	NE	..	66.3	69	NE	6	10:40 P	1401	48.2	..	..	..	57.8	82	W	9
3:23 P	1652	44.8	59	NE	..	66.9	69	NE	5	10:44 P	1320	50.4	..	..	..	57.7	82	W	9
3:40 P	1786	43.4	53	NE	..	67.2	67	NE	6	10:44 P	195	57.7	82	W	9	..	..	..	..
4:02 P	1768	43.0	60	NE	..	67.1	66	NE	7	10:44 P	15	54.4	..	..	..	..	..	..	..
4:28 P	1817	43.2	58	NE	..	66.6	66	NE	5	Aug. 27.									
4:29 P	1786	43.4	54	NE	..	66.5	65	NE	5	3:36 P	15	78.1	..	..	..	..	..	..	..
4:48 P	1860	43.6	54	NE	..	66.2	65	NE	6	3:36 P	195	72.4	60	SSW	7	..	..	..	..
5:09 P	1857	44.3	46	NE	..	66.2	66	NE	5	3:36 P	331	67.6	66	WSW	..	72.4	60	SSW	7
5:30 P	1872	42.8	61	NE	..	65.6	67	NE	4	3:43 P	347	67.6	68	SW	..	71.5	64	SSW	8
5:37 P	1917	43.2	60	NE	..	65.2	68	NE	4	3:50 P	675	62.1	80	WSW	..	71.5	64	SSW	8
6:20 P	1729	43.4	83	..	..	64.1	66	NE	4	3:57 P	518	64.4	76	WSW	..	71.3	64	SSW	8
6:29 P	1624	44.8	90	..	..	64.0	65	NE	4	4:19 P	575	63.5	78	WSW	..	69.6	65	SSW	8
6:32 P	1664	44.5	80	..	..	63.8	65	ENE	4	4:53 P	722	61.1	85	WSW	..	68.4	69	SSW	7
6:39 P	1734	43.6	78	..	..	63.5	65	ENE	4	5:14 P	911	58.0	92	WSW	..	67.6	68	SSW	9
6:46 P	1648	44.5	74	..	..	63.3	64	ENE	5	5:34 P	1021	56.3	93	WSW	..	67.3	71	SSW	9
6:50 P	1461	46.4	74	..	..	63.2	63	ENE	4	5:52 P	1247	53.1	92	W	..	66.0	75	SSW	9
6:57 P	1421	46.4	94	..	..	63.2	63	ENE	4	6:13 P	1405	52.4	92	WNW	..	64.6	78	SSW	8
7:08 P	1310	48.4	94	..	..	63.1	63	ENE	4	6:16 P	1434	53.0	92	WNW	..	64.6	80	SSW	8
7:08 P	1004	52.0	84	..	..	63.1	61	ENE	5	6:32 P	1465	58.2	42	NW	..	64.3	83	SSW	8
7:08 P	195	63.1	61	ENE	5	..	..	..	..	6:40 P	1513	57.5	85	NW	..	64.1	86	SSW	8
7:08 P	15	62.1	..	..	..	..	..	..	..	6:57 P	1418	55.4	81	..	..	63.8	87	SSW	8
Aug. 17.										7:12 P	1244	57.3	84	..	..	63.4	88	SSW	8
4:09 P	15	71.9	..	..	..	..	..	..	..	7:32 P	1070	59.1	93	..	..	63.3	90	SSW	8
4:09 P	195	69.9	61	WNW	10	..	..	..	..	7:42 P	450	63.6	95	..	..	63.3	91	SSW	9
4:09 P	565	62.8	64	W	..	69.9	61	WNW	10	7:53 P	314	64.8	95	..	..	63.3	91	SSW	9
4:18 P	823	58.3	71	W	..	69.0	59	W	12	7:53 P	195	63.3	91	SSW	9	..	..	..	..
4:29 P	1123	53.3	77	W	..	69.0	59	W	9	7:53 P	15	63.4	..	..	..	..	..	..	..
4:33 P	1091	54.4	81	W	..	68.8	60	W	9	Sept. 5.									
4:47 P	1390	49.0	81	W	..	68.8	62	W	7	2:50 P	15	82.2	..	..	..	..	..	..	..
4:51 P	1388	48.8	81	W	..	69.1	63	W	6	2:50 P	195	78.9	54	WSW	5	..	..	..	..
5:00 P	1589	45.9	90	WNW	..	67.8	64	W	9	2:50 P	377	73.4	54	WSW	..	78.9	54	WSW	5
5:18 P	1773	42.7	89	WNW	..	67.9	65	W	8	3:15 P	634	69.8	60	W	..	78.5	52	WSW	7
5:35 P	1795	43.9	80	WNW	..	67.2	63	W	10	3:21 P	604	70.8	58	WSW	..	78.3	52	WSW	7

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897. Sept. 5.		°F.	*p.ct.*		*m.p.s.*	°F.	*p.ct.*		*m.p.s.*
3:38 P	843	69.8	38	W	..	78.4	51	WSW	7
3:54 P	738	70.6	43	W	..	77.9	52	WSW	7
4:04 P	991	71.0	28	WNW	..	77.5	53	WSW	6
4:21 P	1172	73.1	14	WNW	..	77.1	54	WSW	6
4:31 P	1236	73.1	..	WNW	..	76.7	56	WSW	6
4:59 P	1248	72.8	..	WNW	..	76.5	59	WSW	6
5:13 P	1280	72.8	..	WNW	..	75.8	61	WSW	6
5:28 P	1222	73.1	..	WNW	..	74.8	63	WSW	6
5:45 P	1286	72.7	..	WNW	..	74.4	65	WSW	7
6:04 P	1279	72.4	..	WNW	..	73.3	69	WSW	7
6:13 P	1294	72.4	..	WNW	..	72.7	69	WSW	8
6:19 P	1219	72.7	..	WNW	..	72.5	70	SW	8
6:26 P	1361	72.5	..	WNW	..	72.5	71	SW	8
6:35 P	1413	71.8	..	WNW	..	72.4	71	SW	8
6:48 P	968	74.2	..	..	..	72.0	73	WSW	8
7:00 P	748	71.9	24	..	..	71.4	74	WSW	8
7:00 P	195	71.4	74	WSW	8	..	..	..	..
7:00 P	15	67.6	..	..	..	..	..	..	..
9:37 P	15	61.3	..	..	..	..	..	..	..
9:37 P	195	66.2	88	WSW	8	..	..	..	..
9:37 P	675	73.2	34	..	..	66.2	88	WSW	8
9:45 P	686	75.0	36	..	..	66.0	89	WSW	8
9:46 P	666	73.8	36	..	..	65.8	89	W	8
10:30 P	688	73.8	39	..	..	66.1	85	W	9
11:00 P	587	75.8	36	..	..	66.3	84	W	10
11:30 P	582	76.8	34	..	..	65.2	88	W	9
12:00 P	612	76.7	33	..	..	65.4	88	W	9
Sept. 6.									
0:28 A	15	56.5	..	..	..	64.0	92	W	9
0:28 A	628	75.3	33	..	..	64.0	92	W	9
0:33 A	841	75.2	26	..	..	64.0	92	W	8
1:00 A	853	75.6	15	..	..	63.5	93	W	8
1:30 A	853	77.0	..	..	..	62.4	90	W	8
2:00 A	810	76.5	..	..	..	62.4	98	W	8
2:30 A	740	75.8	..	..	..	61.5	98	W	8
3:00 A	740	75.5	15	..	..	62.7	94	W	7
3:30 A	735	74.4	19	..	..	62.6	90	WNW	8
4:00 A	682	75.4	19	..	..	62.5	91	WNW	8
4:38 A	776	72.2	29	WNW	..	61.6	91	WNW	9
5:00 A	771	72.3	34	WNW	..	62.4	89	NW	9
5:00 A	15	51.7	..	..	..	62.5	87	NW	9
5:30 A	701	74.0	35	N	..	62.5	87	NW	9
6:00 A	716	74.2	37	N	..	63.3	85	NW	9
6:25 A	784	73.1	37	N	..	64.5	81	NW	9
6:45 A	871	72.0	37	N	..	64.6	80	NW	8
6:50 A	854	71.4	37	N	..	64.7	78	NW	8
7:10 A	972	72.0	36	N	..	65.5	79	NW	8

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897. Sept. 6.		°F.	*p.ct.*		*m.p.s.*	°F.	*p.ct.*		*m.p.s.*
7:45 A	967	70.7	37	N	..	67.4	75	NW	7
8:17 A	954	72.0	37	NNW	..	69.5	75	NW	5
8:49 A	1031	70.6	38	NNW	..	72.2	72	WNW	5
9:03 A	1008	70.0	41	NNW	..	72.7	71	WNW	5
9:23 A	1009	70.0	45	NNW	..	75.4	68	WNW	5
9:30 A	807	70.7	47	NNW	..	75.0	68	WNW	5
9:30 A	195	75.0	68	WNW	5	..	..	..	..
9:30 A	15	76.9	..	..	..	..	..	..	..
Sept. 7.									
9:25 A	15	64.9	..	..	..	..	..	..	..
9:25 A	195	61.3	71	ENE	8	..	..	..	..
9:25 A	456	56.5	75	ENE	..	61.3	71	ENE	8
9:31 A	471	56.3	75	ENE	..	62.0	71	ENE	8
10:03 A	562	55.0	76	ENE	..	62.3	69	ENE	7
10:09 A	549	54.7	76	ENE	..	62.0	73	ENE	7
10:14 A	341	57.2	77	ENE	..	62.0	73	NE	7
10:32 A	492	55.2	77	ENE	..	62.0	73	NE	7
10:40 A	502	55.7	78	ENE	..	62.0	73	ENE	7
10:50 A	524	55.0	81	ENE	..	62.0	73	ENE	7
10:55 A	550	55.4	76	ENE	..	61.9	73	ENE	7
11:03 A	571	54.7	79	ENE	..	62.5	73	ENE	7
11:15 A	400	57.0	78	ENE	..	62.0	73	ENE	7
11:17 A	343	57.2	78	ENE	..	62.0	73	ENE	7
11:38 A	468	56.6	77	ENE	..	61.2	72	ENE	7
11:38 A	195	61.2	72	ENE	7	..	..	..	..
11:38 A	15	64.7	..	..	..	..	..	..	..
Sept. 8.									
10:50 A	15	69.9	..	..	..	..	..	..	..
10:50 A	195	63.9	76	SSW	7	..	..	..	..
10:50 A	535	56.7	76	SW	..	63.9	76	SSW	7
11:03 A	856	58.5	74	W	..	64.6	77	SSW	7
11:12 A	805	59.0	76	W	..	64.4	78	SSW	6
11:28 A	923	62.3	78	W	..	66.9	72	SSW	6
11:31 A	828	57.4	78	W	..	67.7	72	SSW	6
11:44 A	1057	59.9	78	W	..	67.0	72	SSW	7
11:52 A	1091	59.7	78	W	..	67.3	72	SSW	6
0:17 P	876	60.8	75	WSW	..	70.4	68	SW	7
0:30 P	802	55.4	75	WSW	..	70.5	67	SW	8
0:45 P	950	56.1	75	WSW	..	71.2	66	SW	8
1:00 P	924	57.9	78	..	..	71.5	67	SW	8
1:15 P	1051	62.6	78	WSW	..	71.6	68	SW	8
1:21 P	971	57.0	79	WSW	..	71.8	68	SW	8
1:49 P	981	55.6	79	WSW	..	71.7	73	SSW	7
2:06 P	1007	61.0	78	WSW	..	70.8	73	SSW	8
2:13 P	1107	64.4	63	WSW	..	70.8	74	SSW	8
2:29 P	939	61.5	77	WSW	..	70.9	73	SSW	8
2:52 P	952	59.4	78	WSW	..	69.7	75	SSW	8

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897. Sept. 8.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
3:00 P	981	60.3	78	..	..	69.6	77	sw	7
3:20 P	957	61.5	78	wsw	..	69.6	78	wsw	9
3:31 P	889	55.6	78	wsw	..	68.7	80	wsw	8
3:51 P	870	56.7	78	..	..	68.0	83	wsw	8
4:12 P	865	55.6	81	..	..	67.7	85	wsw	7
4:35 P	975	62.8	79	..	..	67.0	89	wsw	7
5:05 P	1223	62.6	70	..	..	66.4	90	sw	7
5:20 P	1256	61.4	70	..	..	65.8	90	sw	8
5:30 P	917	61.5	74	..	..	64.6	91	sw	8
5:38 P	1166	62.6	78	..	..	64.6	91	sw	7
6:00 P	1112	62.8	79	..	..	65.3	93	wsw	7
6:30 P	1056	62.4	81	..	..	64.5	95	wsw	7
7:10 P	1016	64.1	80	..	..	63.7	94	sw	8
7:30 P	1166	62.8	72	..	..	63.7	94	sw	7
7:42 P	975	62.8	81	..	..	63.5	95	sw	7
8:15 P	964	63.9	75	..	..	63.2	95	sw	6
8:41 P	827	64.4	79	..	..	62.6	99	sw	7
8:50 P	943	66.0	64	..	..	62.4	100	sw	7
9:05 P	792	64.2	82	..	..	62.4	100	sw	7
9:16 P	822	64.6	84	..	..	62.4	100	sw	7
9:20 P	722	62.8	84	..	..	62.4	100	sw	7
9:24 P	674	62.6	84	..	..	62.4	100	sw	8
9:32 P	492	64.2	84	..	..	62.4	100	sw	7
9:39 P	412	65.0	84	..	..	62.4	100	sw	7
9:39 P	195	62.4	100	sw	7	..	..	..	..
9:39 P	15	61.7	..	..	..	..	..	..	..
10:32 P	15	61.6	..	..	..	..	..	..	..
10:32 P	195	62.4	100	sw	8	..	..	..	..
10.32 P	527	65.0	98	..	..	62.4	100	sw	8
10:35 P	586	66.4	93	..	..	62.4	100	wsw	7
10:45 P	629	67.0	90	..	..	62.4	100	wsw	7
10:55 P	569	66.2	96	..	..	62.3	100	wsw	7
11:30 P	569	66.9	94	..	..	62.8	100	wsw	7
12:00 P	566	68.8	90	..	..	63.2	100	wsw	7
Sept. 9.									
0:40 A	15	64.0	..	..	..	63.6	100	wsw	6
0:40 A	489	71.2	82	..	..	63.6	100	wsw	6
1:06 A	591	71.2	81	..	..	64.0	100	wsw	7
1:30 A	454	71.0	85	..	..	64.1	100	wsw	7
2:00 A	480	70.6	90	..	..	64.2	100	w	7
2:23 A	517	70.3	92	..	..	64.2	100	w	7
2.37 A	512	70.4	92	..	..	64.2	100	w	7
3:00 A	495	70.5	91	..	..	64.2	100	wsw	6
3:30 A	550	69.2	93	..	..	64.2	100	w	6
4:00 A	464	70.8	90	..	..	64.0	100	w	6
4:20 A	460	70.8	89	..	..	63.6	100	w	6
4:25 A	438	70.8	89	..	..	63.7	100	w	7

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897. Sept. 9.		°F	p. ct.		m.p.s.	°F	p. ct.		m.p.s.
4:54 A	436	71.3	87	..	..	63.5	100	w	6
5:04 A	15	62.4	..	..	..	63.5	100	w	7
5:04 A	419	71.5	86	NNW	..	63.5	100	w	7
5:34 A	389	71.1	86	NNW	..	63.5	100	w	6
6:05 A	349	71.0	87	NNW	..	63.5	100	w	6
6:29 A	309	71.2	86	NW	..	63.6	100	w	6
6:40 A	298	71.1	87	NW	..	64.0	100	w	6
7:08 A	298	71.7	82	NNW	..	64.5	100	w	6
7:22 A	281	71.3	83	..	..	64.7	100	w	5
7:35 A	297	73.1	75	..	..	65.5	100	w	5
7:39 A	234	67.4	95	..	..	65.7	100	w	5
7:39 A	195	65.7	100	w	5	..	..	..	..
7:39 A	15	69.8	..	..	..	..	..	..	..
Sept. 10.									
2:12 P	15	92.0	..	..	..	..	..	..	..
2:12 P	195	88.2	59	w	7	..	..	..	..
2:12 P	461	84.0	66	w	..	88.2	59	w	7
2:17 P	504	83.2	..	w	..	88.6	60	WNW	6
2:41 P	487	83.8	70	w	..	88.7	61	w	7
2:53 P	658	80.5	75	w	..	88.0	60	w	8
3:15 P	962	75.1	79	w	..	87.7	63	w	7
3:29 P	1115	73.8	78	WNW	..	87.0	63	w	7
3:45 P	1416	70.6	78	NW	..	86.6	64	w	7
3:54 P	1492	69.1	81	NW	..	86.2	66	w	7
4:10 P	1844	64.6	76	NW	..	85.4	66	w	7
4:27 P	1772	66.1	72	NW	..	84.9	67	w	8
4:49 P	1758	66.4	77	NW	..	84.7	70	wsw	7
5:06 P	1810	65.5	71	NW	..	83.7	71	wsw	7
5:16 P	1791	65.9	70	NW	..	82.9	72	wsw	8
5:34 P	2154	61.7	66	NW	..	82.0	74	w	8
6:02 P	2322	59.0	71	NW	..	81.1	73	w	8
6:19 P	2249	59.9	71	NW	..	80.7	76	w	8
6:28 P	2192	60.9	71	NW	..	79.9	78	w	8
6:47 P	1829	65.9	70	..	..	79.2	78	w	8
7:10 P	2181	61.4	70	..	..	79.0	78	w	9
7:24 P	2240	61.0	66	..	..	77.8	82	w	7
7:37 P	2324	59.4	65	..	..	77.6	84	w	7
7:53 P	2290	59.6	65	..	..	76.9	85	w	7
8:11 P	2234	59.9	68	..	..	76.8	84	w	8
8:18 P	1937	64.4	71	..	..	76.9	84	w	9
8:35 P	1531	68.6	72	..	..	76.8	84	w	8
8:57 P	1494	69.5	72	..	..	76.1	84	w	8
9:02 P	1511	69.1	72	..	..	76.1	84	w	8
9:17 P	1125	75.1	72	..	..	76.0	85	w	8
9:29 P	873	78.8	67	..	..	75.6	85	w	8
9:39 P	553	83.1	58	..	..	75.6	85	w	7
9:45 P	397	83.0	57	..	..	75.9	85	w	8

Date and Hour.	At Different Heights. Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Date and Hour.	At Different Heights. Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897. Sept. 10.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.	**1897.** Sept. 28.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
9:49 P	271	84.2	57	..	..	75.9	85	W	8	10:29 A	15	..	..	..	..	..	..	..	..
9:49 P	195	75.9	85	W	8	..	..	..	..	10:29 A	195	49.2	46	WNW	7	..	..	..	..
9:49 P	15	72.3	..	..	..	..	..	..	..	10:29 A	426	44.0	52	NW	..	49.2	46	WNW	7
Sept. 11.										10:43 A	700	39.1	56	NW	..	49.5	44	WNW	6
1:37 P	15	70.0	..	..	..	..	..	..	..	11:02 A	1116	33.0	62	NNW	..	50.4	44	WNW	8
1:37 P	195	69.3	87	ENE	10	..	..	..	..	11:13 A	1024	35.0	51	N	..	51.3	42	WNW	10
1:37 P	302	74.6	85	ENE	..	69.3	87	ENE	10	11:21 A	1128	34.6	59	NNW	..	51.3	42	NW	11
1:56 P	421	75.5	82	ENE	..	68.1	85	NE	11	11:36 A	465	47.2	45	NW	..	51.9	40	WNW	11
2:04 P	548	73.0	84	ENE	..	67.5	85	NE	12	11:36 A	195	51.9	40	WNW	11	..	..	..	..
2:05 P	658	73.9	85	ENE	..	67.5	87	NE	13	11:36 A	15	..	..	..	..	..	..	..	..
2:06 P	688	73.7	85	ENE	..	67.6	85	NE	13	2:00 P	15	59.8	..	..	..	..	..	..	..
2:06 P	195	67.6	85	NE	13	..	..	..	..	2:00 P	195	56.8	29	NW	13	..	..	..	..
2:06 P	15	71.1	..	..	..	..	..	..	..	2:00 P	553	51.7	26	NW	..	56.8	29	NW	13
Sept. 19.										2:13 P	776	48.1	27	NW	..	56.9	28	NW	14
0:08 P	15	72.9	..	..	..	..	..	. 1	..	2:24 P	1181	43.5	32	NW	..	56.8	27	NW	12
0:08 P	195	67.6	49	SSW	10	..	..	..	..	2:31 P	1201	42.8	34	NW	..	57.6	28	NW	11
0:08 P	634	56.9	58	SSW	..	67.6	49	SSW	10	2:37 P	1359	40.5	35	NNW	..	57.5	27	NW	10
0:16 P	863	52.9	70	SSW	..	66.7	49	SSW	11	2:42 P	1268	42.1	34	NNW	..	57.3	27	NW	13
0:19 P	915	55.0	47	SW	..	66.7	49	SSW	11	2:53 P	1532	38.5	35	NW	..	57.1	27	NW	15
0:30 P	1184	51.8	47	SW	..	66.9	47	SSW	11	2:59 P	1740	35.3	36	NW	..	52.3	25	NW	15
0:43 P	1423	49.8	71	SW	..	65.9	43	S	13	3:00 P	1778	35.1	36	NW	..	57.3	25	NW	15
1:03 P	1624	47.9	75	SW	..	66.8	43	S	12	3:05 P	1561	37.4	36	NNW	..	57.3	25	NW	14
1:24 P	1853	45.0	77	WSW	..	66.7	43	SSW	12	3:28 P	1416	39.1	37	NNW	..	57.4	25	NW	13
1:40 P	2043	43.2	75	WSW	..	66.7	44	SSW	12	3:38 P	1124	43.7	34	NW	..	57.4	26	NW	13
1:58 P	1958	46.3	45	WSW	..	66.8	40	SSW	11	3:49 P	845	47.7	31	NW	..	57.4	27	NW	12
2:43 P	2204	44.4	..	WSW	..	65.9	48	S	11	4:02 P	517	52.6	27	NW	..	56.6	28	WNW	13
3:01 P	2328	43.1	..	WSW	..	65.5	50	S	12	4:02 P	195	56.6	28	WNW	13	..	..	..	..
3:23 P	2454	42.8	..	WSW	..	65.7	55	SSW	9	4:02 P	15	59.9	..	..	..	..	..	..	..
4:01 P	2934	35.6	..	WSW	..	65.7	57	SSW	11	Oct. 9.									
4:22 P	3002	38.1	..	WSW	..	63.2	61	SSW	11	9:50 A	15	63.8	.	..	..	..	..	..	..
4:27 P	2970	38.5	..	WSW	..	62.8	61	SSW	11	9:50 A	195	60.0	57	W	11	..	..	W	..
4:33 P	2980	38.4	..	WSW	..	62.7	62	SSW	11	9:50 A	550	53.0	65	W	..	60.0	57	W	11
5:03 P	2584	41.4	..	WSW	..	61.5	71	S	8	10:19 A	580	54.0	64	W	..	61.0	52	W	11
5:17 P	2381	41.4	26	WSW	..	60.9	72	S	8	10:29 A	550	54.4	61	W	..	61.6	50	W	11
5:23 P	2324	41.2	..	WSW	..	60.7	73	S	9	10:43 A	885	48.7	67	WNW	..	62.4	49	WNW	11
5:27 P	2196	41.0	69	WSW	..	60.4	74	S	9	10:51 A	1180	43.2	75	WNW	..	62.2	48	WNW	11
5:33 P	2072	43.3	77	WSW	..	60.3	74	S	9	11:02 A	1370	42.3	50	WNW	..	62.5	47	WNW	12
5:40 P	1917	45.3	77	WSW	..	59.7	76	S	8	11:21 A	1627	38.4	46	WNW	..	62.7	46	WNW	14
5:48 P	1678	48.7	81	WSW	..	59.5	78	S	8	11:35 A	1591	39.4	..	WNW	..	62.6	45	WNW	11
6:05 P	1415	52.6	63	SW	..	58.7	80	S	8	11:51 A	1737	37.6	53	WNW	..	63.6	41	WNW	16
6:13 P	1135	56.2	40	SW	..	58.6	80	S	8	11:59 A	1696	39.6	47	WNW	..	63.3	41	WNW	17
6:22 P	851	60.5	35	SW	..	58.3	81	S	8	0:08 P	1632	39.2	..	WNW	..	63.4	41	WNW	14
6:29 P	545	59.4	79	SW	..	58.2	81	S	8	0:31 P	1540	41.6	..	WNW	..	63.8	41	WNW	11
6:34 P	347	59.6	79	..	..	58.2	81	S	8	0:42 P	1361	42.1	56	WNW	..	63.5	39	WNW	14
6:37 P	268	58.0	79	SSW	..	58.2	81	S	8	1:00 P	1418	42.3	66	WNW	..	63.6	39	WNW	10
6:37 P	195	58.2	81	S	8	..	..	..	..	1:13 P	1369	43.7	..	WNW	..	63.8	38	WNW	9
6:37 P	15	58.1	..	..	..	..	..	..	..	1:25 P	1344	41.0	..	WNW	..	63.6	38	WNW	11

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1897. Oct. 9.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
1:38 P	1103	46.1	..	WNW	..	62.7	38	WNW	11
1:51 P	762	50.7	..	WNW	..	61.8	37	WNW	10
2:05 P	545	54.5	..	WNW	..	61.8	36	WNW	11
2:05 P	195	61.6	36	WNW	11	..	..	WNW	..
2:05 P	15	64.7	..	..	..	..	..	..	..
3:10 P	15	63.6	..	..	..	..	..	..	..
3:10 P	195	60.5	36	WNW	9	..	..	..	..
3:10 P	556	53.8	39	WNW	..	60.5	36	WNW	9
3:21 P	827	48.8	45	NW	..	60.4	37	WNW	10
3:33 P	1183	43.0	51	NW	..	60.2	37	WNW	10
3:46 P	1033	43.4	..	WNW	..	60.0	38	WNW	7
3:51 P	1387	39.6	60	NW	..	59.9	38	WNW	7
4:02 P	1526	36.6	47	NW	..	59.2	39	WNW	8
4:17 P	833	47.0	51	NW	..	58.2	37	NW	8
4:22 P	1178	41.8	61	NW	..	57.7	37	NW	8
4:41 P	1440	36.7	61	WNW	..	56.4	37	NNW	8
4:50 P	1380	38.0	63	WNW	..	55.8	38	NNW	9
5:08 P	1454	36.6	66	NW	..	54.9	38	NW	9
5:22 P	2006	31.4	29	NW	..	53.4	39	NW	9
5:34 P	1970	31.9	24	NNW	..	53.0	40	NW	7
5:42 P	2135	27.0	..	..	..	52.4	40	NNW	7
5:45 P	2050	28.6	29	..	..	52.3	40	NNW	7
5:52 P	1442	36.0	54	..	..	52.3	40	NNW	7
5:58 P	1533	34.8	54	..	..	52.1	40	NNW	8
6:09 P	1210	39.6	60	..	..	51.9	41	NNW	9
6:21 P	916	43.2	48	..	..	51.3	41	NNW	8
6:33 P	584	47.2	39	..	..	50.1	43	NNW	8
6:40 P	370	48.6	38	..	..	50.1	42	NNW	8
6:40 P	195	50.1	42	NNW	8	..	..	..	..
6:40 P	15	48.9	..	..	..	..	..	..	..
Oct. 15.									
3:57 P	15	83.5	..	..	..	..	..	..	..
3:57 P	195	80.3	49	WSW	7	..	..	..	..
3:57 P	571	74.5	56	W	..	80.3	49	WSW	7
4:08 P	923	68.9	65	WNW	..	79.9	50	WSW	7
4:22 P	1270	62.1	75	WNW	..	79.2	53	WSW	6
4:32 P	1538	57.8	75	WNW	..	78.4	54	WSW	6
4:37 P	1640	56.5	76	WNW	..	78.2	54	WSW	6
4:42 P	1818	60.0	37	WNW	..	78.0	54	WSW	6
4.54 P	2056	57.9	29	NW	..	77.3	54	WSW	7
5:00 P	2088	57.5	28	NW	..	77.1	54	SW	7
5:03 P	2079	57.5	29	NW	..	76.9	55	SW	7
5:15 P	2492	..	26	..	..	76.0	56	SW	7
5:23 P	2946	49.6	..	..	..	75.6	57	SW	6
5:30 P	2792	51.0	43	..	..	74.3	58	SW	7
5:40 P	3157	46.4	44	..	..	73.4	60	SW	7
5:43 P	3192	47.7	28	..	..	73.3	62	SW	8
1897. Oct. 15.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
6:05 P	3571	42.4	13	..	..	72.3	64	SW	8
6:19 P	3422	44.1	13	..	..	71.8	64	SW	8
6:28 P	3212	47.0	13	..	..	71.5	64	SW	8
6:31 P	3157	46.4	13	..	..	71.3	64	SW	8
6:43 P	2772	51.3	43	..	..	70.9	65	SW	8
7:03 P	2176	60.0	32	..	..	70.5	66	WSW	8
7:06 P	2070	60.0	32	..	..	70.3	66	WSW	8
7:13 P	1994	56.6	..	..	..	69.9	67	WSW	8
7:20 P	1872	56.0	70	..	..	69.6	67	WSW	7
7:26 P	1786	56.8	71	..	..	69.4	67	WSW	7
7:47 P	1372	62.5	..	..	..	69.2	70	WSW	8
8:05 P	770	71.7	63	..	..	68.2	70	WSW	8
8:13 P	445	76.7	54	..	..	68.0	71	WSW	9
8:18 P	272	78.3	54	W	..	68.0	71	WSW	9
8:18 P	195	68.0	71	WSW	9	..	..	..	..
8:18 P	15	63.9	..	..	..	..	..	..	..
Nov. 10.									
3:47 P	15	47.9	..	..	..	..	..	..	..
3:47 P	195	44.6	34	WNW	8	..	..	..	..
3:47 P	481	41.3	35	WNW	..	44.6	34	WNW	8
4:00 P	650	38.3	37	WNW	..	44.2	34	WNW	6
4:10 P	759	36.6	38	WNW	..	44.0	35	WNW	7
4:17 P	859	34.6	39	WNW	..	43.5	36	WNW	7
4:39 P	879	34.3	46	WNW	..	42.5	40	W	5
4:49 P	958	33.6	44	WNW	..	42.1	45	W	7
4:54 P	986	33.3	42	WNW	..	41.6	46	W	7
4:59 P	942	33.5	41	WNW	..	41.4	46	W	7
5:08 P	932	33.7	45	..	..	41.1	48	W	8
5:18 P	767	34.9	46	..	..	40.4	49	W	8
5:25 P	605	37.0	50	..	..	40.3	49	W	9
5:33 P	485	38.4	50	..	..	40.1	50	W	9
5:38 P	355	40.2	47	..	..	39.9	50	W	9
5:38 P	195	39.9	50	W	9	..	..	..	..
5:38 P	15	39.5	..	..	..	..	..	..	..
Dec. 9.									
4:02 P	15	49.2	..	..	..	..	..	..	..
4:02 P	195	47.5	93	SSW	7	..	..	..	..
4:02 P	538	44.2	86	WSW	..	47.5	93	SSW	7
4:14 P	809	42.1	75	W	..	47.4	94	SSW	7
4:16 P	924	41.0	83	W	..	47.4	94	SSW	7
4:19 P	1009	43.6	66	W	..	47.4	94	SSW	7
4:28 P	1206	42.4	64	..	..	47.3	95	SSW	7
4:42 P	1451	41.7	77	..	..	46.8	95	SSW	8
4:47 P	1472	41.5	78	..	..	46.8	96	SSW	8
5:04 P	1208	44.3	69	..	..	46.8	96	SSW	8
5:08 P	980	44.9	71	..	..	46.8	97	SSW	8
5:10 P	877	42.9	81	..	..	46.8	97	SSW	8

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1897. Dec. 9.		°F	p. ct.		m.p.s.	°F	p. ct.		m.p.s.
5:24 P	812	43.3	82	..	..	46.7	98	SSW	8
5:34 P	530	46.5	72	..	..	46.6	99	SSW	8
5:42 P	312	46.8	100	..	..	46.5	100	SSW	8
5:42 P	195	46.5	100	SSW	8	..	..	..	..
5:42 P	15	..	..	..	..	..	..	..	..
1898. April 26.									
4:18 P	15	41.0	..	..	..	..	..	..	..
4:18 P	195	39.6	76	NE	7	..	..	..	..
4:18 P	497	35.3	..	NE	..	39.6	76	NE	7
4:30 P	830	32.8	..	NE	..	39.0	76	NE	8
4:38 P	1078	27.8	..	NE	..	38.9	76	NE	7
4:49 P	1292	26.8	..	NE	..	38.8	79	NE	8
5:07 P	1617	21.7	..	NE	..	38.0	76	ENE	7
5:30 P	1322	24.8	..	NE	..	38.3	77	ENE	7
5:49 P	846	28.8	..	NE	..	37.1	78	ENE	6
6:02 P	532	30.9	..	NE	..	36.8	77	ENE	7
6:02 P	195	36.8	77	ENE	7	..	..	..	..
6:02 P	15	40.2	..	..	..	..	..	..	..
May 5.									
4:31 P	15	60.9	..	..	..	..	..	..	..
4:31 P	195	57.0	65	S	7	..	..	..	..
4:31 P	367	52.8	..	SSW	..	57.0	65	S	7
4:46 P	464	50.4	..	S	..	55.3	67	S	8
4:56 P	580	49.8	..	SSW	..	54.5	68	S	6
5:14 P	820	45.9	..	SW	..	53.9	69	S	7
5:32 P	918	44.7	..	SW	..	52.8	70	S	7
5:46 P	790	45.9	..	SW	..	51.9	72	S	6
5:55 P	846	45.1	..	SW	..	51.1	73	S	7
6:02 P	847	45.7	..	SW	..	50.9	73	S	7
6:07 P	958	43.8	..	SW	..	50.8	74	S	6
6:16 P	884	44.7	..	SW	..	50.8	75	S	6
6:19 P	679	47.6	..	SW	..	50.4	75	S	6
6:28 P	521	48.9	..	SW	..	50.1	77	S	7
6:33 P	362	49.2	..	SW	..	50.0	77	S	7
6:33 P	195	50.0	77	S	7	..	..	..	..
6:33 P	15	53.8	..	..	..	..	..	..	..
May 9.									
3:24 P	15	47.1	..	..	..	..	..	..	..
3:24 P	195	46.1	36	ENE	6	..	..	..	..
3:24 P	420	43.8	..	NE	..	46.1	36	ENE	6
3:38 P	778	42.2	..	NNE	..	45.8	35	ENE	7
3:41 P	832	44.2	..	NNE	..	45.3	35	ENE	7
3:51 P	1180	40.8	..	N	..	45.2	35	ENE	7
4:04 P	1424	36.3	..	N	..	44.5	36	ENE	7
4:24 P	1574	35.3	..	NNE	..	44.4	39	ENE	5
4:35 P	1700	34.6	..	NNE	..	44.4	36	ENE	5

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1898. May 9.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
4:43 P	1809	34.3	..	NNE	..	44.4	36	ENE	5
4:47 P	1880	35.6	..	NNE	..	44.4	36	ENE	5
4:52 P	1986	35.3	..	NNE	..	44.4	38	ENE	5
5:16 P	2373	33.1	..	NNE	..	44.1	39	E	5
5:23 P	2413	32.3	..	NNE	..	44.1	38	E	3
5:34 P	2214	33.3	..	NNE	..	43.2	36	E	5
5:38 P	2110	34.3	..	NNE	..	43.1	36	E	5
5:48 P	1952	33.2	..	NNE	..	43.0	36	E	5
6:07 P	1598	36.4	..	N	..	42.3	37	ESE	4
6:19 P	1280	39.3	..	N	..	42.0	40	ESE	4
6:32 P	830	44.1	..	NNE	..	41.2	40	ESE	5
6:39 P	531	45.3	..	NE	..	41.1	40	ESE	4
6:39 P	195	41.1	40	ESE	4	..	..	..	..
6:39 P	15	42.6	..	..	..	..	..	..	..
May 17.									
4:10 P	15	62.8	..	..	..	..	..	..	..
4:10 P	195	60.9	40	WNW	8	..	..	..	..
4:10 P	337	57.9	..	WNW	..	60.9	40	WNW	8
4:17 P	476	55.5	..	WNW	..	61.3	40	WNW	8
4:31 P	859	50.0	..	WNW	..	60.1	40	WNW	9
4:35 P	980	48.6	..	WNW	..	60.9	39	WNW	8
4:42 P	1180	44.9	..	WNW	..	61.9	39	WNW	8
4:52 P	1369	40.0	..	WNW	..	62.0	39	WNW	10
5:06 P	1764	33.8	..	WNW	..	60.9	37	WNW	11
5:13 P	2085	29.8	..	WNW	..	60.9	37	WNW	12
5:18 P	1808	33.0	..	WNW	..	61.7	36	WNW	11
5:35 P	1439	37.7	..	NW	..	61.2	36	WNW	14
5:37 P	1896	33.8	..	WNW	..	61.2	36	WNW	13
5:45 P	1684	34.8	..	WNW	..	58.4	45	WNW	12
5:50 P	1825	32.4	..	WNW	..	57.9	46	NW	13
6:02 P	2092	29.6	..	WNW	..	57.0	46	NW	11
6:05 P	2165	27.4	..	WNW	..	57.0	46	NW	11
6:07 P	2239	26.7	..	WNW	..	56.8	46	NW	12
6:10 P	2276	26.3	..	WNW	..	56.2	46	NW	12
6:31 P	2364	25.9	..	WNW	..	56.1	48	NW	10
6:46 P	2556	22.9	..	WNW	..	54.9	49	NW	8
6:49 P	2575	22.5	..	WNW	..	54.8	50	NW	8
7:03 P	2451	25.1	..	WNW	..	53.9	52	NW	9
7:11 P	2575	23.9	..	WNW	..	53.9	51	NW	9
7:17 P	2762	22.1	..	NW	..	53.8	50	NW	9
7:19 P	2720	24.8	..	NW	..	53.8	49	NW	9
7:37 P	2822	23.1	..	..	..	52.9	51	NW	7
7:43 P	2848	21.9	..	..	..	52.2	52	NW	7
8:12 P	2838	21.9	..	..	..	51.7	51	NW	8
8:20 P	2731	23.7	..	..	..	52.1	52	NW	8
8:33 P	2500	24.9	..	..	..	50.8	52	NW	8
8:42 P	2383	26.5	..	..	..	50.8	52	NW	9

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1898. May 17.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
8:45 p	2389	26.4	..	..	..	50.8	52	NW	9
8:48 p	2218	27.7	..	..	..	50.7	52	NW	9
9:32 p	1440	36.4	..	..	..	49.7	54	NW	7
9:50 p	922	42.5	..	..	..	49.2	54	NW	6
10:10 p	362	53.5	..	..	..	49.8	53	NW	8
10:20 p	294	50.8	..	..	..	49.8	53	NW	7
10:20 p	195	49.8	..	..	..	..	..	..	..
10:20 p	15	46.5	..	..	..	..	..	..	..
May 19.									
11:36 a	15	73.3	..	..	..	..	..	..	..
11:36 a	195	69.4	53	SSW	9	..	..	..	..
11:36 a	392	64.1	59	..	..	69.4	53	SSW	9
11:42 a	568	61.2	62	..	..	71.2	52	SW	9
11:44 a	588	61.7	62	..	..	70.4	52	SW	11
11:50 a	840	61.2	61	WSW	..	71.2	52	SW	10
11:54 a	790	58.7	65	WSW	..	71.5	52	SSW	10
0:03 p	798	57.7	68	SW	..	72.1	51	SSW	9
0:08 p	873	57.5	68	WSW	..	73.2	49	SSW	9
0:15 p	1132	60.6	50	W	..	72.9	50	SSW	9
0:29 p	1287	59.6	50	W	..	72.3	50	SSW	9
0:37 p	1444	58.9	49	W	..	72.3	50	SSW	11
0:47 p	1582	57.3	51	W	..	71.3	51	SSW	9
0:49 p	1602	56.5	52	W	..	71.3	51	SSW	8
0:51 p	1658	58.0	52	W	..	71.9	52	SSW	8
0:56 p	1819	56.8	52	W	..	71.9	51	SSW	8
1:00 p	1967	53.5	51	W	..	72.9	52	SSW	8
1:08 p	2052	51.5	51	W	..	72.6	51	SSW	7
1:20 p	2063	51.0	51	W	..	73.4	51	SSW	8
1:33 p	2202	49.2	63	W	..	73.2	51	SSW	8
1:39 p	2251	50.6	68	WNW	..	73.3	51	SSW	8
1:46 p	2196	49.7	..	WNW	..	73.7	51	SSW	8
2:09 p	1992	52.4	65	W	..	75.3	51	SSW	9
2:35 p	1962	52.5	72	W	..	72.6	54	SSW	13
2:43 p	1932	53.3	71	W	..	71.9	56	SSW	13
2:58 p	1766	56.3	69	W	..	72.3	55	SSW	14
3:08 p	1633	58.2	69	W	..	73.6	54	SSW	10
3:12 p	1579	58.8	68	W	..	73.4	54	SSW	10
3:24 p	1280	56.3	67	W	..	74.9	52	SSW	11
3:25 p	1305	60.4	65	W	..	74.4	52	SW	12
3:38 p	1113	55.8	75	W	..	73.9	53	SW	11
3:42 p	1129	60.5	..	W	..	74.4	52	SW	9
4:00 p	822	61.3	..	WSW	..	74.0	53	SW	12
4:13 p	593	65.5	..	WSW	..	74.1	52	SW	13
4:27 p	392	68.6	..	SW	..	74.3	54	SW	13
4:27 p	195	74.3	54	SW	13	..	..	..	..
4:27 p	15	75.2	..	..	..	..	..	..	..

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1898. May 23.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
11:19 a	15	64.8	..	..	..	..	..	..	..
11:19 a	195	62.7	46	SSW	9	..	..	..	..
11:19 a	329	57.6	47	SSW	..	62.7	46	SSW	9
11:29 a	608	53.3	48	SSW	..	63.0	43	SSW	9
11:39 a	755	51.8	50	SSW	..	65.0	42	SSW	9
11:44 a	806	53.6	43	SSW	..	63.8	43	SSW	8
11:55 a	1098	52.1	35	SW	..	63.6	44	SSW	8
0:08 p	1301	50.4	29	SW	..	64.1	42	SSW	8
0:18 p	1354	49.7	27	SW	..	64.1	42	SSW	7
0:32 p	1668	48.3	27	SSW	..	64.4	42	SSW	6
1:07 p	1703	48.1	33	SSW	..	66.1	37	SSW	9
1:38 p	1398	49.2	41	SSW	..	64.9	38	SSW	7
1:44 p	1852	47.6	30	SSW	..	64.3	37	SSW	7
1:55 p	1993	47.0	27	SSW	..	64.0	37	SSW	7
3:00 p	2279	..	27	SSW	..	65.8	36	S	8
3:56 p	2213	..	25	SW	..	63.5	37	S	6
4:15 p	2419	..	26	SSW	..	62.6	37	SSW	6
4:26 p	2412	44.3	27	SSW	..	62.7	38	SSW	6
4:35 p	2166	45.9	29	SSW	..	62.5	38	SSW	8
4:43 p	2363	44.1	27	SW	..	62.1	39	SSW	8
4:47 p	2192	45.7	37	SW	..	62.1	40	SSW	7
5:00 p	1825	48.8	75	SW	..	61.2	40	SSW	7
5:06 p	1306	50.8	62	SW	..	60.9	40	SSW	7
5:11 p	1366	49.8	58	SW	..	60.3	40	SSW	8
5:18 p	1146	51.8	66	SSW	..	60.1	40	SSW	8
5:25 p	888	52.8	66	SSW	..	59.2	41	SSW	8
5:33 p	840	52.1	48	SSW	..	59.0	43	SSW	8
5:44 p	575	52.8	48	SSW	..	58.3	44	S	6
5:56 p	307	55.5	50	SSW	..	57.7	44	S	7
5:56 p	195	57.7	44	S	7	..	..	..	..
5:56 p	15	61.0	..	..	..	..	..	..	..
May 26.									
4:24 p	15	48.3	..	..	..	..	..	..	..
4:24 p	195	45.9	100	ENE	8	..	..	..	..
4:24 p	315	42.6	100	..	8	45.9	100	ENE	8
4:30 p	499	42.1	100	..	8	45.8	100	ENE	8
4:33 p	550	45.2	100	..	8	45.7	100	ENE	8
4:42 p	755	52.5	72	..	7	45.7	100	ENE	7
4.56 p	913	51.7	52	..	6	45.6	100	ENE	7
5:13 p	1027	49.6	100	..	7	45.6	100	ENE	8
5:27 p	1222	46.8	100	..	..	45.6	100	ENE	8
5:36 p	1540	42.8	100	SE	8	45.6	100	ENE	8
6:05 p	1823	39.0	100	..	9	45.6	100	ENE	8
6:42 p	1910	38.4	100	..	10	45.6	100	ENE	9
7:00 p	1986	37.5	95	..	9	45.7	100	ENE	10
7:20 p	2001	38.5	81	..	10	45.9	100	ENE	9
7:36 p	2121	38.0	96	..	11	46.3	100	ENE	9

Date and Hour.	At Different Heights. Metres above sea.	At Different Heights. Air Temperature.	At Different Heights. Relative Humidity.	At Different Heights. Wind. Dir.	At Different Heights. Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	On Blue Hill, 195 m. Relative Humidity.	On Blue Hill, 195 m. Wind. Dir.	On Blue Hill, 195 m. Wind. Vel.
1898. May 26.		°F.	*p. ct.*		*m.p.s.*	°F	*p. ct.*		*m.p.s.*
7:53 P	2080	38.8	100	..	12	46.3	100	ENE	9
8:35 P	1531	43.4	100	..	10	46.5	100	NE	8
8:51 P	936	49.3	100	..	11	46.5	100	NE	9
9:10 P	615	50.9	100	..	..	46.5	100	NE	9
9:40 P	594	52.0	100	..	12	46.5	100	NE	11
9:42 P	466	39.0	100	NE	12	46.5	100	NE	11
9:50 P	395	39.7	100	..	13	46.5	100	NE	11
9:50 P	195	46.5	100	NE	11	..	..	..	..
9:50 P	15	48.4	..	..	..	..	..	..	..
May 27.									
4:17 P	15	56.3	..	..	..	..	..	..	..
4:17 P	195	54.0	100	NNE	7	..	..	..	..
4:17 P	240	55.5	93	..	..	54.0	100	NNE	7
4:38 P	295	57.8	91	E	..	54.0	100	ENE	6
4:38 P	195	54.0	100	ENE	6	..	..	..	..
4:38 P	15	56.3	..	..	..	..	..	..	..
May 31.									
3:03 P	15	68.5	..	..	..	..	..	..	..
3:03 P	195	64.5	57	E	7	..	..	..	..
3:03 P	371	63.9	70	ENE	7	64.5	57	E	7
3:19 P	567	61.3	72	NE	7	65.1	57	E	6
3:35 P	730	59.8	75	NNE	7	65.2	57	E	5
3:51 P	973	55.8	77	NNE	12	64.3	59	ENE	5
4:03 P	1255	51.9	83	NNE	11	64.1	60	ENE	4
4:22 P	1713	44.0	100	NNE	11	64.1	60	ENE	4
4:32 P	1975	41.0	100	NNE	13	64.3	60	ENE	4
5:26 P	2235	39.0	..	NNE	..	64.0	61	NE	4
5:43 P	2542	35.8	..	NNE	..	62.4	64	NE	3
6:22 P	2152	39.3	..	NNE	..	62.0	65	NNE	3
6:55 P	1848	43.0	..	NNE	..	61.4	66	NNE	5
7:13 P	1754	44.9	..	NNE	..	61.0	67	NE	6
7:35 P	1333	51.9	..	NNE	..	59.7	73	ENE	7
7:45 P	1199	53.5	..	NNE	..	59.0	77	ENE	6
7:50 P	1185	52.2	..	NNE	..	58.9	79	ENE	6
8:00 P	990	54.0	..	NNE	..	58.0	82	ENE	6
8:22 P	792	56.6	..	..	..	57.2	91	NE	5
8:35 P	473	54.4	100	NE	..	56.3	93	NE	5
8:40 P	232	56.5	100	NE	..	56.2	94	NE	5
8:40 P	195	56.2	94	NE	5	..	..	..	..
8:40 P	15	59.1	..	..	..	..	..	..	..
June 2.									
3:02 P	15	56.3	..	..	..	..	..	..	..
3:02 P	195	52.4	93	NE	7	..	..	..	..
3:02 P	252	..	100	..	..	52.4	93	NE	7
3:08 P	370	47.4	99	..	..	52.4	93	NE	7
3:17 P	675	46.1	..	..	..	52.4	93	NE	7
3:34 P	844	45.1	..	..	..	52.5	91	NE	7

Date and Hour.	At Different Heights. Metres above sea.	At Different Heights. Air Temperature.	At Different Heights. Relative Humidity.	At Different Heights. Wind. Dir.	At Different Heights. Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	On Blue Hill, 195 m. Relative Humidity.	On Blue Hill, 195 m. Wind. Dir.	On Blue Hill, 195 m. Wind. Vel.
1898. June 2.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*
3:40 P	1153	44.6	91	..	..	52.5	91	NNE	7
3.47 P	1412	47.1	85	..	..	52.5	92	NNE	8
4:00 P	1845	47.3	57	..	..	52.5	92	NNE	8
5:15 P	2072	43.1	75	NE	..	51.4	98	NNE	7
5:40 P	2115	44.0	70	..	..	51.4	100	NNE	9
6:27 P	1842	40.8	100	..	..	51.3	100	NNE	5
6:47 P	1658	44.3	96	..	..	51.3	100	NNE	6
7:12 P	1392	45.0	90	NE	..	51.2	99	NNE	7
7:26 P	862	47.8	95	..	..	51.2	99	NE	7
7:33 P	715	48.3	96	..	..	51.2	99	NE	6
7:44 P	441	49.0	99	..	..	51.0	99	NE	7
7:44 P	195	51.0	99	NE	7	..	..	..	..
7:44 P	15	54.0	..	..	..	..	..	..	..
June 8.									
0:05 P	15	81.4	..	..	..	..	..	..	..
0:05 P	195	77.9	62	S	7	..	..	..	..
0:05 P	335	..	69	SSW	..	77.9	62	S	7
0:30 P	702	..	71	W	..	78.0	62	SSW	7
0:41 P	1120	..	62	W	..	78.4	61	SSW	7
0:53 P	1259	..	64	W	..	78.0	61	SSW	7
1:15 P	1587	..	47	WNW	..	78.2	61	SSW	8
2:07 P	1780	..	46	W	..	77.7	61	S	8
3:15 P	1673	..	41	W	..	75.9	63	SSW	9
3:25 P	1738	..	39	W	..	74.8	64	SSW	10
3:38 P	1222	..	44	..	..	75.6	64	SSW	9
3:43 P	1272	..	41	..	..	74.8	64	SSW	8
3:56 P	935	..	70	WSW	..	73.6	66	SSW	10
4:06 P	612	..	75	SW	..	72.7	67	SSW	9
4:21 P	880	..	75	SSW	..	72.6	67	SSW	9
4:21 P	195	72.6	67	SSW	9	..	..	..	..
4:21 P	15	76.9	..	..	..	..	..	..	..
June 18.									
2:17 P	15	76.2	..	..	..	..	..	..	..
2:17 P	195	70.3	44	SSW	13	..	..	..	..
2:17 P	372	64.0	47	SSW	..	70.3	44	SSW	13
2:56 P	634	58.7	50	SSW	..	69.4	45	SSW	13
3:12 P	786	56.4	53	SSW	..	69.3	45	SSW	12
3:25 P	1236	50.6	57	SSW	..	68.4	46	SSW	12
3:34 P	1356	51.3	48	SW	..	68.4	46	SSW	13
3:38 P	1700	48.1	61	SW	..	68.3	46	SSW	13
4:00 P	1918	46.3	65	SW	..	67.8	41	SSW	14
4:09 P	1993	45.2	67	SW	..	67.3	41	SSW	13
4:31 P	1923	46.3	65	SW	..	66.3	44	SSW	12
4:45 P	1816	46.1	67	SW	..	66.0	45	SSW	11
4:51 P	1718	48.4	60	SW	..	66.0	45	SSW	11
4:55 P	1700	47.2	72	SW	..	66.1	45	SSW	11
5:13 P	1224	50.7	47	SSW	..	65.3	42	SSW	10

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1898. June 18.		°F.	p. ct.		m. p. s.	°F.	p. ct.		m. p. s.
5:31 P	792	53.8	50	SSW	..	65.0	43	SSW	11
5:42 P	638	56.0	52	SSW	..	64.2	44	SSW	11
5:48 P	376	59.8	52	SSW	..	63.7	52	SSW	11
5:48 P	195	63.7	45	SSW	11	..	..	..	..
5:48 P	15	69.7	..	..	..	..	..	..	..
June 20.									
3:05 P	15	74.4	..	..	..	..	..	..	..
3:05 P	195	69.9	38	WNW	8	..	..	..	..
3:05 P	385	67.2	43	WNW	8	69.9	38	WNW	8
4:05 P	385	67.7	42	WNW	8	71.5	40	WNW	10
4:18 P	829	59.5	48	WNW	8	71.3	39	WNW	9
4:37 P	1443	48.6	67	W	10	71.2	41	WNW	8
4:52 P	1706	44.0	75	W	13	71.0	41	WNW	8
5:00 P	1829	42.6	..	..	..	71.1	41	WNW	8
5:14 P	2332	36.0	85	WNW	10	71.0	41	WNW	6
5:17 P	1946	40.5	82	..	12	70.9	42	W	6
5:36 P	2616	32.2	85	W	12	70.0	42	W	9
5:40 P	2515	33.2	80	..	12	69.3	42	W	8
5:59 P	2814	30.5	82	W	11	68.8	44	W	8
6:17 P	2982	29.8	100	WNW	..	68.0	46	W	7
6:25 P	3084	27.9	..	WNW	..	67.3	46	W	7
6:26 P	3166	31.9	51	WNW	..	67.2	46	W	7
6:38 P	2333	36.6	69	..	12	66.7	46	W	7
7:00 P	3084	27.3	98	WNW	12	66.3	47	W	7
7:05 P	3142	25.8	100	..	12	66.3	47	W	7
7:07 P	3303	28.6	55	..	..	66.1	48	W	7
7:10 P	3142	25.8	100	..	12	66.0	48	W	7
7:31 P	2753	32.2	85	WNW	11	64.5	53	W	7
7:45 P	2789	30.9	85	..	10	64.4	56	W	8
8:00 P	2518	33.9	85	..	11	64.0	60	W	8
8:15 P	2166	37.7	87	..	..	64.0	60	W	7
8:36 P	1839	41.7	81	..	14	63.1	64	WNW	4
8:47 P	1423	48.1	71	..	11	62.4	65	W	5
9:00 P	860	56.6	66	..	..	62.2	67	W	5
9:05 P	613	59.5	68	..	..	62.3	66	W	5
9:15 P	395	63.2	63	..	7	62.6	66	W	5
9:23 P	257	64.7	63	..	..	62.9	66	W	6
9:28 P	195	62.9	66	W	6	..	..	..	..
9:23 P	15	60.9	..	..	..	..	..	..	..
June 24.									
11:04 A	15	74.4	..	..	..	..	..	..	..
11:04 A	195	72.2	58	WSW	7	..	..	..	..
11:04 A	387	69.1	55	WSW	8	72.2	58	WSW	7
11:18 A	594	66.3	57	W	10	72.2	58	WSW	7
11:25 A	913	62.6	57	WNW	10	72.2	56	WSW	8
11:28 A	983	63.9	50	..	10	73.0	56	WSW	8
11:39 A	1488	56.6	60	WNW	9	73.1	56	WSW	6
1898. June 24.		°F	p. ct.		m. p. s.	°F.	p. ct.		m. p. s.
11:52 A	1910	51.5	65	WNW	..	74.0	55	WSW	7
0:02 P	2092	49.1	78	WNW	12	74.0	56	WSW	7
0:31 P	2417	46.3	78	WNW	16	76.0	54	W	8
0:39 P	2358	46.9	71	WNW	..	76.1	53	W	8
0:50 P	2250	48.4	72	WNW	..	76.0	52	W	8
0:52 P	2200	48.6	76	WNW	..	76.0	52	W	8
1:02 P	1972	52.0	78	..	15	76.1	51	W	8
1:20 P	1511	58.4	62	WNW	13	76.1	52	WSW	7
1:32 P	1312	61.4	58	..	..	78.8	50	WSW	9
1:35 P	1112	64.1	53	..	..	78.8	50	WSW	9
1:38 P	913	64.1	..	W	..	78.7	49	WSW	9
1:44 P	878	65.4	..	W	12	78.2	49	WSW	8
1:54 P	573	70.3	..	WSW	..	79.1	49	WSW	9
2:00 P	387	75.5	..	..	9	79.2	49	WSW	9
3:30 P	373	76.4	..	..	9	79.9	49	WSW	8
3:30 P	195	79.9	49	WSW	8	..	..	..	..
3:30 P	15	83.4	..	..	..	..	..	..	..
July 16.									
4:47 P	15	81.0	..	..	..	..	..	..	..
4:47 P	195	77.9	37	NW	7	..	..	..	..
4:47 P	365	74.8	43	NW	6	77.9	37	NW	7
5:03 P	509	72.5	44	NW	6	77.9	37	NW	6
5:14 P	836	66.6	48	NW	7	77.8	39	NW	5
5:26 P	1078	61.5	52	NW	6	78.2	37	NW	6
5:38 P	1242	59.2	52	NW	7	76.7	39	NW	5
5:50 P	1379	57.0	57	NW	..	76.7	40	NW	4
6:00 P	1673	52.4	60	NW	8	76.6	44	NW	4
6:23 P	2157	44.8	63	NW	8	74.9	44	NW	4
6:36 P	2042	46.4	55	NW	8	74.7	44	NW	4
6:42 P	2027	46.8	55	NW	7	74.0	45	NW	4
6:49 P	2193	43.4	58	NW	..	73.7	46	NW	4
6:51 P	2233	43.9	41	NNW	..	73.6	46	NW	4
6:59 P	2477	40.9	41	NNW	8	73.0	44	NW	5
7:12 P	2919	36.6	42	NNW	8	72.8	45	NNW	5
7:48 P	2747	40.0	38	NNW	9	70.8	44	NNW	3
8:14 P	2979	36.2	30	..	8	70.5	47	NNW	6
8:43 P	2522	41.0	34	..	8	69.7	44	NNW	7
9:06 P	2338	44.0	37	..	6	68.9	45	NNW	7
9:11 P	2268	44.9	36	..	6	68.8	45	NNW	7
9:14 P	2157	43.5	41	..	7	68.7	44	NNW	7
9:27 P	2073	45.9	42	..	8	68.7	44	NNW	8
9:37 P	2022	46.8	42	..	8	68.1	44	NNW	9
9:54 P	1536	53.9	42	..	10	67.7	46	NNW	7
10:18 P	919	62.0	47	..	8	66.8	46	NNW	6
10:30 P	624	66.3	47	..	12	65.7	50	NNW	6
10:45 P	385	70.1	44	..	12	70.1	51	NW	6
10:53 P	300	71.0	43	..	..	71.0	51	NW	6

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1898. June 24.		°F	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
10:53 P	195	64.8	51	NW	6	..	..	..	..
10.53 P	15	56.6	..	..	..	..	..	..	..
July 22.									
10:52 A	15	68.5	..	..	..	..	..	..	..
10:52 A	195	64.0	67	NE	8	..	..	..	..
10:52 A	402	59.8	75	NE	10	64.0	67	NE	8
10:54 A	502	58.8	72	ENE	11	64.0	67	ENE	8
11:01 A	602	61.6	100	ENE	10	63.9	67	ENE	8
11:17 A	862	63.7	93	ENE	7	63.8	65	ENE	7
11:20 A	1000	62.5	91	E	6	63.3	66	NE	7
11:28 A	1015	62.5	91	E	6	63.9	64	ENE	8
11:43 A	1055	62.4	91	..	6	64.3	56	ENE	8
12:00 A	1000	64.0	76	..	7	67.3	53	ENE	9
0:15 P	1338	61.7	74	..	7	66.7	51	ENE	9
0:30 P	1308	65.3	87	..	7	65.4	54	ENE	6
0:50 P	1378	60.9	77	..	6	67.5	55	ENE	7
2:00 P	1165	65.0	64	..	5	67.0	62	ENE	6
4:00 P	1330	60.8	76	..	5	67.0	57	ENE	4
6:20 P	1001	62.3	71	..	5	64.1	69	E	4
7:58 P	932	62.5	69	..	5	62.8	68	ESE	5
8:48 P	1000	62.0	66	..	6	61.1	78	ENE	6
8:54 P	867	63.3	67	..	5	61.1	79	ESE	6
9:04 P	772	65.1	62	..	..	61.0	81	ESE	6
9:15 P	627	66.1	47	..	7	61.0	82	ESE	6
9:25 P	407	66.1	42	..	7	61.0	81	ESE	6
9:30 P	367	64.8	72	..	..	60.9	80	ESE	6
9:30 P	195	60.9	80	ESE	6	..	..	..	..
9:30 P	15	58.7	..	..	..	..	..	..	..
10:38 P	15	57.2	..	..	..	..	..	..	..
10:38 P	195	60.9	86	E	5	..	..	..	..
10:38 P	436	66.0	60	..	7	60.9	86	E	5
10:46 P	672	66.0	40	..	7	60.9	86	E	5
10:56 P	896	64.6	43	..	8	61.0	88	E	6
11:09 P	952	64.1	43	..	9	60.9	89	E	5
11:30 P	1000	63.7	88	..	6	60.9	92	E	5
11:45 P	1040	63.3	33	..	6	60.8	94	E	4
July 23.									
1:00 A	1000	63.0	29	..	5	59.4	99	ENE	4
3:52 A	889	60.0	50	E	5	57.6	98	NE	5
4:00 A	871	60.2	52	E	5	57.5	96	NE	5
4:45 A	833	61.1	53	ENE	5	57.3	95	NE	7
5:11 A	815	62.0	52	ENE	5	57.7	96	NE	6
5:24 A	710	62.3	59	ENE	5	57.9	96	NE	6
5:34 A	607	61.1	74	ENE	6	58.0	96	NE	6
5:50 A	423	59.2	90	NE	7	58.2	96	NE	6
5:50 A	15	56.6	..	..	..	58.2	96	NE	6
6:07 A	563	62.5	71	ENE	5	58.9	96	NE	6
1898. July 23.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
6:19 A	644	62.9	61	ENE	4	59.3	96	NE	7
6:36 A	826	62.0	51	ENE	5	60.4	96	NE	6
6:53 A	895	62.4	46	ENE	5	61.8	94	NE	5
6:59 A	1025	64.2	53	ENE	7	61.8	94	ENE	5
7:00 A	1000	64.3	53	ENE	7	61.7	94	ENE	5
7:38 A	1058	66.1	43	ENE	6	61.9	90	ENE	8
8:03 A	924	61.1	59	ENE	6	62.8	88	ENE	5
8:11 A	859	58.0	77	ENE	6	62.6	86	ENE	6
8:52 A	968	57.4	79	ENE	5	64.0	82	ENE	4
9:03 A	968	57.6	81	..	5	65.0	78	ENE	5
9:07 A	990	57.1	91	..	5	65.1	77	ENE	5
9:07 A	195	65.1	77	ENE	5	..	..	..	..
9:07 A	15	68.9	..	..	..	..	..	..	..
July 29.									
5:28 P	15	87.2	..	..	..	..	..	..	..
5:28 P	195	83.0	..	SSW	5	..	..	..	..
5:28 P	357	80.5	80	SW	5	83.0	..	SSW	5
5:51 P	527	77.6	88	SW	6	81.4	86	SSW	5
6:03 P	706	74.6	97	SW	7	80.4	89	S	4
6:19 P	799	75.9	71	WSW	6	79.5	90	S	4
6:24 P	899	74.0	71	WSW	6	78.9	91	SSW	4
6:28 P	1029	72.6	70	W	6	78.7	92	SSW	4
6:38 P	567	75.4	93	SW	6	78.6	92	SSW	5
6:48 P	380	78.1	88	SW	6	77.7	96	SSW	5
6:48 P	195	77.7	96	SSW	5	..	..	..	..
6:48 P	15	81.7	..	..	..	..	..	..	..
Aug. 3.									
5:30 P	15	81.5	..	..	..	..	..	..	..
5:30 P	195	75.6	85	SSW	5	..	..	..	..
5:30 P	350	72.8	93	SSW	5	75.6	85	SSW	5
5:38 P	603	70.6	75	SSW	6	75.4	86	SSW	5
5:50 P	796	67.9	74	SSW	6	74.7	88	S	6
6:11 P	952	66.7	62	SSW	6	73.4	90	S	5
6:51 P	1131	65.0	50	SSW	5	71.8	95	S	6
7:11 P	1144	64.9	50	SSW	6	71.0	96	S	6
7:40 P	1395	63.1	38	SSW	6	70.1	98	S	7
8:15 P	1505	61.2	36	..	6	69.9	99	S	6
9:11 P	1644	60.2	35	..	6	69.8	98	SSW	6
9:40 P	1722	59.4	55	..	5	69.0	100	S	7
10:00 P	1747	59.2	56	..	5	68.9	100	S	7
10:25 P	1525	62.7	42	..	7	68.9	100	S	6
10:33 P	1334	64.8	39	..	7	68.8	100	S	6
10:37 P	1234	64.4	43	..	..	68.7	100	S	6
10:40 P	1124	66.2	39	..	..	68.6	100	S	6
10:46 P	948	65.9	81	..	8	68.1	100	S	7
10:50 P	869	66.6	81	..	8	68.1	100	S	6
11:05 P	610	68.6	78	..	9	67.9	100	S	7

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.				Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.		Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1898. Aug. 3.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*	**1898.** Aug. 6.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*
11:20 P	413	69.2	80	..	9	67.8	100	S	6	0:25 P	820	65.3	68	W	7	77.1	56	W	7
11:24 P	312	69.4	79	..	..	67.3	100	S	6	0:30 P	632	68.6	62	..	7	76.2	56	W	8
11:24 P	195	67.3	100	S	6	..	..	..	..	0:38 P	992	62.8	69	W	8	76.8	57	W	9
11:24 P	15	69.1	..	..	..	..	..	..	..	0:47 P	1236	56.8	73	W	..	76.1	56	W	8
Aug. 5.										1:10 P	1852	50.5	59	WNW	10	75.8	59	W	6
2:54 P	15	73.6	..	..	..	..	..	..	..	1:15 P	1542	55.2	57	..	10	75.9	60	W	7
2:54 P	195	72.3	80	WNW	7	..	..	..	..	1:38 P	2279	45.2	65	NW	10	76.9	59	W	9
2:54 P	417	66.2	78	WNW	6	72.3	80	WNW	7	1:45 P	2307	43.5	75	NW	11	77.3	56	W	7
3:27 P	863	60.5	82	NW	8	73.6	69	WNW	7	1:50 P	1952	48.3	63	..	..	78.0	57	W	8
3:32 P	703	64.0	77	NW	..	73.0	69	WNW	8	2:09 P	2634	40.4	58	WNW	12	78.1	55	W	9
3:40 P	1198	55.3	77	WNW	12	73.4	66	WNW	8	2:37 P	2708	41.7	41	WNW	12	78.1	54	W	7
3:56 P	1506	51.4	75	WNW	12	72.7	63	NW	7	2:40 P	2357	45.1	67	..	11	78.2	54	W	7
4:04 P	1586	52.7	47	NW	11	72.9	63	NW	6	2:58 P	2814	43.0	42	..	16	78.2	54	W	7
4:06 P	1678	53.4	45	NW	..	73.1	63	NW	6	3:17 P	3100	39.3	35	WNW	11	78.2	55	W	7
4:19 P	1874	50.7	45	NW	7	73.5	64	NW	5	3:48 P	3164	38.1	38	WNW	12	78.1	54	WSW	7
4:35 P	2202	49.7	39	NW	8	73.5	61	NW	5	3:53 P	3009	35.8	47	WNW	12	78.1	55	WSW	7
5:07 P	2277	48.8	36	WNW	9	73.0	62	WNW	3	3:58 P	2907	37.0	42	WNW	12	78.1	55	WSW	6
5:31 P	2595	45.8	33	WNW	10	72.9	64	WNW	4	4:06 P	3213	37.4	50	WNW	14	78.2	53	WSW	6
5:35 P	2598	46.0	32	WNW	12	72.7	63	WNW	4	4:19 P	3237	37.8	46	WNW	14	78.1	53	WSW	8
5:48 P	2772	45.0	27	WNW	10	73.4	63	WNW	3	4:25 P	3237	36.1	49	WNW	14	78.1	53	WSW	8
5:56 P	2847	43.5	25	W	12	73.4	63	W	3	4:38 P	3176	35.6	48	WNW	15	78.2	55	WSW	7
6:03 P	2946	43.6	22	W	13	72.7	63	W	3	4:43 P	3130	35.6	48	NW	15	77.5	55	WSW	6
6:14 P	3147	42.2	20	W	14	71.6	63	W	3	4:45 P	3215	39.3	38	NW	14	77.3	55	WSW	7
6:23 P	3192	41.5	18	W	14	72.5	64	WSW	4	4:49 P	2918	37.5	52	..	..	77.3	55	WSW	7
6:33 P	3065	42.0	18	W	14	71.8	67	WSW	4	5:02 P	2635	40.9	70	NW	13	77.3	56	WSW	7
6:45 P	3065	39.9	20	W	14	71.5	72	WSW	3	5:24 P	2700	40.2	70	WNW	12	77.2	58	WSW	5
7:05 P	2923	40.0	24	WNW	14	70.2	64	W	5	5:59 P	2341	44.4	65	WNW	12	74.7	64	W	6
7:15 P	2881	41.1	24	WNW	13	70.5	62	W	5	6:13 P	2087	47.1	75	WNW	14	74.4	66	W	5
7:25 P	3082	41.3	22	..	12	70.6	68	W	6	6:15 P	1997	47.3	90	WNW	13	74.3	67	W	5
7:54 P	2913	42.0	20	..	11	69.6	68	WSW	6	6:25 P	1919	48.9	91	WNW	10	74.2	69	W	5
8:05 P	2797	39.9	25	..	12	69.1	74	WSW	5	6:45 P	1428	56.1	82	W	10	72.4	71	W	5
8:30 P	2440	42.7	65	..	10	67.1	76	WSW	6	6:58 P	1177	60.4	74	W	9	72.3	72	W	6
8:53 P	1874	48.8	68	..	11	66.7	79	WSW	8	7:11 P	868	65.3	70	W	8	72.2	72	WSW	7
9:00 P	1724	51.0	90	..	9	66.7	79	WSW	8	7:22 P	615	69.5	66	WNW	10	72.2	72	WSW	8
9:13 P	1506	54.2	83	..	9	66.6	80	W	9	7:32 P	396	73.1	63	WNW	12	71.7	72	SW	8
9:25 P	1263	58.6	79	..	12	67.0	77	W	9	7:43 P	286	73.9	61	..	..	71.5	72	SW	8
9:45 P	960	60.5	79	..	12	67.0	80	WNW	10	7:43 P	195	71.5	72	SW	8	..	..	..	..
9:57 P	630	64.5	67	..	10	65.8	83	NW	8	7:43 P	15	69.9	..	..	..	..	..	..	..
10:10 P	427	66.6	65	..	10	65.5	85	WNW	6	Aug. 25.									
10:16 P	320	67.1	55	WNW	..	65.1	85	WNW	5	5:36 P	15	..	..	..	..	..	..	..	..
10:16 P	195	65.1	85	WNW	5	..	..	..	..	5:36 P	195	75.2	90	S	4	..	..	..	..
10:16 P	15	65.2	..	..	..	..	..	..	..	5:36 P	370	75.3	80	SW	6	75.2	90	S	4
Aug. 6.										6:32 P	560	72.4	76	WSW	10	74.0	96	SSW	5
11:55 A	15	79.3	..	..	..	..	..	..	..	6:41 P	407	74.4	75	SW	11	74.4	96	SSW	5
11:55 A	195	76.0	59	W	8	..	..	..	..	7:15 P	407	73.6	77	SW	10	73.6	100	SSW	4
11:55 A	332	73.0	60	W	7	76.0	59	W	8	7:33 P	800	68.8	85	..	9	72.7	99	SSW	4
0:15 P	450	71.1	63	W	7	77.1	58	W	8	8:05 P	996	67.5	88	..	7	72.8	98	SSW	4

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1898. Aug. 25.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*
8:16 P	800	69.9	80	. .	8	72.6	99	SSW	5
8:26 P	602	71.8	78	. .	9	72.5	99	SSW	5
8:29 P	412	74.2	90	. .	7	72.5	100	SSW	5
8:29 P	195	72.5	100	SSW	5	. .	. .	. .	. .
8:29 P	15	72.5	. .	. .	. .	. .	. .	. .	. .
Aug. 26.									
10:58 A	15	74.6	. .	. .	. .	. .	. .	. .	. .
10:58 A	195	71.8	58	W	9	. .	. .	. .	. .
10:58 A	394	67.9	65	W	7	71.8	58	W	9
11:04 A	587	64.1	69	W	7	72.0	58	W	9
11:10 A	778	61.8	73	W	8	71.9	59	W	8
11:13 A	839	60.3	74	W	8	71.6	59	W	8
11:22 A	1110	56.0	83	W	8	72.0	57	W	9
11:30 A	1296	53.3	95	W	8	72.2	56	W	9
11:33 A	1371	52.6	98	W	8	72.2	56	W	9
11:53 A	1211	56.1	87	W	8	72.9	56	WSW	7
11:55 A	1452	59.7	32	. .	. .	73.9	56	WSW	7
0:01 P	1796	56.7	32	W	6	73.9	57	WSW	8
0:04 P	1714	54.9	31	W	6	73.8	58	W	7
0:10 P	1452	57.7	28	. .	. .	73.9	58	W	7
0:18 P	1266	53.2	100	W	8	72.1	58	W	7
0:21 P	1256	53.7	100	W	8	72.6	58	W	8
0:42 P	1505	52.3	100	W	8	72.9	59	W	9
0:45 P	1620	59.6	25	. .	. .	72.0	59	W	7
1:13 P	2352	51.5	20	W	13	74.0	57	W	8
1:33 P	1922	52.3	22	W	9	74.0	55	W	7
1:38 P	1560	55.6	. .	W	8	74.0	54	W	9
1:40 P	1784	54.7	. .	W	8	73.9	54	W	9
1:52 P	1605	57.0	33	W	7	74.2	54	W	8
2:03 P	1641	57.2	32	W	7	73.2	53	W	10
2:05 P	1608	51.1	73	W	7	73.1	53	W	10
2:06 P	1592	51.1	75	W	7	73.1	53	W	10
2:13 P	1641	50.7	83	W	7	73.6	54	W	10
2:20 P	1617	50.8	83	W	7	73.5	53	W	8
2:37 P	1781	55.4	34	W	8	73.1	53	W	10
2:50 P	1834	54.4	32	W	. .	73.3	52	W	10
2:58 P	2488	51.1	29	W	10	73.1	52	W	9
3:12 P	3126	45.1	33	W	13	72.9	52	W	10
3:27 P	2842	46.4	30	W	12	72.7	52	W	11
3:36 P	3033	45.6	29	W	12	72.7	52	W	10
4:13 P	3633	38.4	35	WSW	12	71.8	54	W	9
4:16 P	3680	38.5	37	WSW	12	71.7	54	W	11
4:33 P	3144	43.1	37	WSW	12	71.6	55	W	9
4:48 P	3470	39.2	42	WSW	13	71.1	55	W	9
4:57 P	3519	38.0	42	WSW	16	70.9	56	W	8
5:24 P	3353	38.2	35	WSW	15	69.9	58	WNW	7
5:42 P	2975	41.3	67	W	13	69.6	58	WNW	9

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1898. Aug. 26.		°F.	*p. ct.*		*m.p.s.*	°F	*p. ct.*		*m.p.s.*
5:58 P	2184	49.9	60	W	10	68.2	61	WNW	8
6:05 P	2312	49.4	63	W	10	67.8	61	WNW	8
6:19 P	1821	47.4	73	W	18	67.3	62	WNW	8
6:25 P	1971	46.6	74	W	18	66.9	62	WNW	9
6:30 P	1890	48.9	74	. .	. .	66.7	63	WNW	9
6:53 P	1250	52.6	85	WSW	16	66.0	64	WNW	7
6:35 P	1500	48.8	69	. .	. .	66.9	63	WNW	8
7:01 P	1128	54.8	84	WSW	16	65.4	66	WNW	7
7:19 P	920	56.8	81	. .	13	64.9	66	WNW	7
7:20 P	635	61.0	77	. .	9	64.8	66	WNW	7
7:31 P	410	64.1	69	WNW	12	64.6	67	WNW	7
7:40 P	408	64.0	69	WNW	10	64.6	67	WNW	6
8:37 P	298	64.9	70	NW	9	63.5	66	WNW	7
8:37 P	195	63.5	66	WNW	7	. .	. .	. .	. .
8:37 P	15	. .	. .	. .	. .	. .	. .	. .	. .
Aug. 31.									
10:54 A	15	74.9	. .	. .	. .	. .	. .	. .	. .
10:54 A	195	73.2	76	W	6	. .	. .	. .	. .
10:54 A	377	75.0	49	WNW	9	73.2	76	W	6
11:05 A	556	77.1	31	WNW	10	73.2	76	W	5
11:14 A	782	75.8	26	NW	11	74.1	75	W	5
11:30 A	1062	73.0	. .	NW	12	77.3	75	W	5
11:51 A	1305	69.5	. .	NW	14	78.9	67	W	5
0:06 P	1726	63.4	. .	WNW	15	79.0	63	W	5
0:23 P	2075	59.4	. .	WNW	13	78.9	65	W	5
0:37 P	2282	56.6	. .	WNW	13	78.1	65	W	4
1:55 P	2490	53.5	. .	WNW	. .	80.0	63	WSW	4
5:10 P	1053	71.6	43	W	. .	79.3	66	W	5
5:37 P	555	77.3	53	W	. .	79.0	67	W	6
5:49 P	380	80.0	52	W	. .	79.0	66	W	6
6:00 P	287	80.5	55	. .	. .	78.4	67	WSW	6
6:00 P	195	78.4	67	WSW	6	. .	. .	. .	. .
6:00 P	15	79.5	. .	. .	. .	. .	. .	. .	. .
Sept. 10.									
5:14 P	15	68.8	. .	. .	. .	. .	. .	. .	. .
5:14 P	195	63.8	74	NNW	9	. .	. .	. .	. .
5:14 P	359	61.8	75	NNW	8	63.8	74	NNW	9
5:23 P	488	59.2	. .	N	8	63.7	74	N	8
5:32 P	693	56.9	83	N	6	62.8	75	N	8
5:39 P	674	57.8	80	N	6	62.4	74	N	8
5:50 P	791	57.6	80	N	6	63.9	76	N	8
6:02 P	828	57.5	85	N	6	61.2	75	N	7
6:25 P	896	55.5	84	N	6	62.8	71	N	8
7:03 P	1028	56.4	80	. .	5	59.7	68	N	8
7:21 P	752	57.5	65	. .	. .	59.5	66	N	9
7:32 P	742	53.9	55	. .	5	58.9	65	NNW	10
8:15 P	742	54.0	60	. .	10	57.4	68	N	7

Date and Hour.	At Different Heights. Metres above sea.	At Different Heights. Air Temperature.	At Different Heights. Relative Humidity.	At Different Heights. Wind. Dir.	At Different Heights. Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	On Blue Hill, 195 m. Relative Humidity.	On Blue Hill, 195 m. Wind. Dir.	On Blue Hill, 195 m. Wind. Vel.	Date and Hour.	At Different Heights. Metres above sea.	At Different Heights. Air Temperature.	At Different Heights. Relative Humidity.	At Different Heights. Wind. Dir.	At Different Heights. Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	On Blue Hill, 195 m. Relative Humidity.	On Blue Hill, 195 m. Wind. Dir.	On Blue Hill, 195 m. Wind. Vel.
1898. Sept. 10.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.	**1898.** Sept. 22.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
9:18 P	874	53.5	100	..	5	57.8	68	N	8	11:17 A	393	60.6	66	WSW	..	66.2	57	SW	8
9:28 P	1117	51.4	100	..	5	55.8	67	N	9	11:35 A	548	58.4	68	WSW	..	68.1	55	SW	9
9:45 P	1122	50.7	100	..	6	55.0	70	NNW	6	11:44 A	937	54.3	73	WSW	..	68.4	55	SW	9
10:13 P	1132	49.5	100	..	6	54.1	72	NNW	8	11:54 A	1282	60.1	50	WNW	..	68.7	55	SW	9
10:23 P	822	50.6	100	..	6	53.7	73	NNW	6	0:02 P	1486	60.2	30	W	..	68.2	56	SW	9
10:34 P	646	52.1	93	..	8	53.0	75	NNW	7	0:13 P	1603	59.1	30	W	..	68.2	56	SW	10
10:37 P	510	51.2	88	..	8	52.9	75	NNW	8	0:22 P	1792	56.4	31	W	..	70.0	56	SW	8
10:45 P	415	51.7	87	..	8	52.8	75	NNW	7	0:26 P	1870	55.6	33	W	..	69.1	55	SW	8
10:50 P	300	52.5	85	..	9	52.2	75	NNW	7	0:37 P	2133	53.5	40	W	..	69.4	55	SW	9
10:50 P	195	52.2	75	NNW	7	..	..	..	..	0:45 P	2243	53.1	38	W	..	69.7	55	SW	9
10:50 P	15	54.7	..	..	..	..	..	..	..	1:15 P	2409	50.7	39	WSW	..	69.2	56	SW	9
Sept. 11.										1:35 P	2709	46.3	58	WSW	..	68.1	56	SW	9
3:19 P	15	68.8	..	..	..	..	..	..	..	1:38 P	2882	45.9	56	WSW	..	67.9	57	SW	10
3:19 P	195	64.9	34	WSW	6	..	..	..	..	1:43 P	2964	45.3	50	WSW	..	67.8	57	SW	10
3:19 P	345	59.8	41	W	..	64.9	34	WSW	6	2:16 P	3108	43.6	54	WSW	..	66.9	61	SW	9
3:22 P	395	59.0	40	..	..	65.2	35	WSW	6	2:51 P	3172	42.0	56	WSW	..	66.0	62	SSW	10
7:25 P	2027	40.4	19	..	..	56.4	54	WNW	8	3:14 P	2911	44.6	54	WSW	..	65.6	64	SSW	8
7:25 P	195	56.4	54	WNW	8	..	..	..	..	3:21 P	2808	46.9	52	WSW	..	65.6	66	SSW	6
7:25 P	15	54.0	..	..	..	..	..	..	..	3:31 P	2684	47.5	52	WSW	..	65.4	66	SSW	6
Sept. 21.										3:44 P	2412	48.4	57	WSW	..	64.8	64	SSW	8
0:06 P	15	61.1	..	..	..	..	..	..	..	3:50 P	2427	49.2	54	WSW	..	64.3	65	SSW	8
0:06 P	195	58.4	43	WNW	7	..	..	..	..	4:08 P	1822	56.1	41	WSW	..	63.6	69	SSW	8
0:06 P	417	52.5	44	NW	5	58.4	43	WNW	7	4:22 P	1692	57.4	41	WSW	..	63.4	71	SSW	8
0:27 P	674	48.4	48	NW	3	58.7	42	WNW	6	4:35 P	1436	60.1	36	WSW	..	62.8	72	SSW	8
0:56 P	564	51.0	47	WNW	6	59.0	40	WNW	7	4:47 P	1157	63.3	35	W	..	62.7	74	SSW	8
1:13 P	1079	42.0	63	WNW	6	59.3	40	WNW	7	4:59 P	886	66.7	32	W	..	62.7	75	SSW	9
1:40 P	1153	41.5	65	WNW	7	59.8	39	WNW	8	5:04 P	662	67.2	29	W	..	62.6	74	SSW	10
1:50 P	1212	40.9	65	WNW	7	59.9	39	WNW	7	5:07 P	618	58.5	62	WSW	..	62.6	74	SSW	10
2:08 P	1003	45.3	60	..	7	60.3	39	WNW	7	5:09 P	628	64.5	49	WSW	..	62.6	74	SSW	10
2:34 P	1522	44.5	..	..	7	..	..	..	..	5:20 P	417	58.2	80	WSW	..	61.9	74	SW	10
2:46 P	1700	45.1	17	NW	7	60.8	39	W	7	5:30 P	296	59.5	80	WSW	..	61.6	75	SW	10
2:56 P	1642	45.5	12	..	8	60.8	39	W	7	5:30 P	195	61.6	75	SW	10	..	..	..	..
3:40 P	2073	41.5	5	..	7	60.4	39	WNW	7	5:30 P	15	63.0	..	..	..	..	..	..	..
3:53 P	1732	45.3	3	..	9	59.7	41	W	6	Sept. 23.									
4:16 P	1925	42.9	2	NW	8	58.9	43	W	6	3:07 P	15	76.9	..	..	..	..	..	..	..
4:30 P	1192	41.6	30	WNW	8	58.8	45	W	6	3:07 P	195	73.6	86	SSW	6	..	..	..	..
4:37 P	757	48.5	55	WNW	7	58.7	46	W	5	3:07 P	412	69.5	93	SW	9	73.6	86	SSW	6
4:42 P	692	50.1	52	WNW	7	58.5	44	W	6	3:15 P	658	66.5	100	WSW	..	72.9	86	SSW	6
4:45 P	724	49.4	55	WNW	7	58.4	44	W	6	3:25 P	893	63.5	100	WSW	10	73.8	82	SSW	8
4.57 P	517	52.5	53	W	6	58.0	45	W	6	3:30 P	1094	64.0	73	WSW	..	74.3	81	SSW	8
5:07 P	347	55.5	50	W	6	57.6	45	W	5	3:36 P	1238	63.4	77	WSW	11	73.7	82	SSW	8
5:11 P	236	56.8	50	W	..	57.5	47	W	5	3:52 P	1512	60.4	87	WSW	11	72.6	90	SSW	7
5:11 P	195	57.5	47	W	5	..	..	..	..	4:10 P	1913	54.8	83	WSW	12	72.5	82	SSW	9
5:11 P	15	59.2	..	..	..	..	..	..	..	4:21 P	2192	51.6	100	WSW	16	72.1	85	SSW	8
Sept. 22.										4:27 P	2292	53.5	67	..	13	71.8	87	SSW	8
11:17 A	15	69.5	..	..	..	..	..	..	..	4:49 P	2718	49.3	78	WSW	12	71.5	87	SSW	7
11:17 A	195	66.2	57	SW	8	..	..	..	..	5:02 P	2936	47.4	65	WSW	12	70.5	90	SSW	6

Date and Hour.	At Different Heights. Metres above sea.	At Different Heights. Air Temperature.	At Different Heights. Relative Humidity.	At Different Heights. Wind. Dir.	At Different Heights. Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	On Blue Hill, 195 m. Relative Humidity.	On Blue Hill, 195 m. Wind. Dir.	On Blue Hill, 195 m. Wind. Vel.
1898. Sept. 23.		°F.	p. ct.		m.p.s.	°F	p. ct.		m.p.s.
5:18 P	3034	45.8	62	..	..	70.2	91	SSW	8
5:48 P	3390	40.8	100	WSW	17	68.5	95	SSW	8
6:00 P	3292	41.0	100	..	..	68.5	93	SSW	8
6:20 P	3072	42.9	85	..	18	68.0	96	SSW	7
6:38 P	2774	46.5	92	..	..	67.3	98	SSW	7
6:50 P	2587	49.5	85	..	14	67.0	100	SSW	7
7:02 P	2495	51.0	82	..	16	66.3	100	SSW	7
7:10 P	2279	52.7	82	..	..	66.3	100	SSW	7
7:13 P	2186	52.9	92	..	14	66.4	100	SSW	7
7:20 P	1867	56.5	43	..	12	66.4	100	SSW	7
7:36 P	1451	62.5	50	..	8	66.8	100	SSW	7
7:51 P	1243	64.5	53	..	9	66.3	100	SSW	6
8:04 P	928	66.5	68	..	13	66.8	100	SSW	7
8:15 P	670	63.7	100	..	12	66.8	100	SW	7
8:53 P	460	65.5	100	..	13	67.0	100	SW	7
9:07 P	327	66.8	97	..	11	67.1	100	SW	7
9:07 P	195	67.1	100	SW	7	..	..	..	..
9:07 P	15	68.6	..	..	..	..	..	..	..
Sept. 24.									
2:37 P	15	49.1	..	..	..	..	..	..	..
2:37 P	195	46.1	90	NE	12	..	..	..	..
2:37 P	432	43.8	100	NE	12	46.1	90	NE	12
2:50 P	633	42.0	100	..	13	46.4	88	NE	13
2:54 P	805	40.8	100	ENE	13	46.5	89	NE	10
2:56 P	1020	42.6	100	NE	..	46.6	89	NE	10
3:05 P	1275	44.0	100	NE	8	47.0	89	NE	12
3:09 P	1207	45.9	100	..	8	47.1	88	NE	11
3:17 P	1317	45.6	100	..	8	47.7	86	NE	11
3:30 P	1545	45.8	100	..	9	47.8	84	NE	10
3:54 P	1832	47.1	100	NNE	8	47.2	87	NE	11
3:57 P	1917	49.1	100	NNE	7	47.0	88	NE	12
4:07 P	1982	48.8	100	NNE	9	46.7	94	NE	12
4:15 P	1928	48.6	100	NE	11	46.7	95	NE	11
4:23 P	1631	47.5	98	..	..	46.6	95	NNE	11
4:30 P	1316	42.2	98	..	..	46.2	97	NNE	11
4:40 P	1214	39.8	100	..	10	46.0	98	NNE	10
4:50 P	902	38.7	95	ENE	13	45.8	98	NNE	10
5:06 P	612	41.8	100	..	13	45.8	97	NE	11
5:20 P	422	43.8	100	NE	12	45.8	98	NE	11
5:20 P	195	45.8	98	NE	11	..	..	..	..
5:20 P	15	48.7	..	..	..	..	..	..	..
Sept. 30.									
3:05 P	15	81.3	..	..	..	..	..	..	..
3:05 P	195	78.8	48	SW	7	..	..	..	..
3:05 P	345	74.9	55	SW	..	78.8	48	SW	7
3:22 P	562	71.0	58	SW	..	78.4	47	SW	7
3:31 P	477	71.9	57	SW	..	77.8	49	SW	5

Date and Hour.	At Different Heights. Metres above sea.	At Different Heights. Air Temperature.	At Different Heights. Relative Humidity.	At Different Heights. Wind. Dir.	At Different Heights. Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	On Blue Hill, 195 m. Relative Humidity.	On Blue Hill, 195 m. Wind. Dir.	On Blue Hill, 195 m. Wind. Vel.
1898. Sept. 30.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
4:22 P	874	..	30	WSW	..	75.3	47	SW	6
5:02 P	943	..	19	WSW	..	71.6	67	SW	5
5:15 P	1623	..	28	WSW	..	70.6	73	SW	5
5:31 P	1545	..	..	W	..	70.2	72	SW	6
5:56	1914	..	31	W	..	68.3	72	SW	6
6:10	1903	..	28	..	..	67.5	68	SW	7
7:15	1435	..	21	..	..	65.7	75	SW	6
7:45	1755	..	24	..	..	64.2	82	SW	6
8:20 P	1445	..	22	..	..	63.8	84	SW	7
8:38 P	627	70.0	68	..	..	62.6	88	SW	6
9:00 P	325	71.7	69	..	..	62.7	87	SW	6
9:00 P	15	59.5	..	..	..	62.7	87	SW	6
11:00 P	300	72.0	68	..	..	59.7	95	WSW	6
11:00 P	15	57.3	..	..	..	59.7	95	WSW	6
Oct. 1.									
0:38 A	295	71.6	67	..	..	59.3	99	WSW	6
0:38 A	15	54.5	..	..	..	59.3	99	WSW	6
3:10 A	252	66.0	100	..	..	58.3	100	W	5
3:10 A	195	58.3	100	W	5	..	..	..	..
3:10 A	15	50.1	..	..	..	..	..	..	..
Oct. 31.									
1:10 P	15	48.1	..	..	..	..	..	..	..
1:10 P	195	44.8	80	NW	5	..	..	..	..
1:10 P	352	..	81	NW	8	44.8	80	NW	5
3:10 P	1502	..	93	NW	7	44.9	65	NW	10
5:00 P	2266	..	73	NW	10	41.9	68	NW	6
5:03 P	2340	..	70	NW	..	41.9	68	NW	6
5:30 P	2204	..	93	..	..	41.4	65	NW	7
6:10 P	1624	..	83	..	12	40.0	69	NW	8
7:30 P	1582	..	73	..	13	38.8	75	NW	6
8:00 P	1582	..	75	NNW	11	38.8	76	NW	8
8:17 P	1146	27.5	78	NNW	11	38.2	78	NW	7
8:29 P	872	32.4	73	NNW	15	38.0	79	NW	7
8:39 P	637	35.3	..	NNW	18	38.0	79	NW	7
8:52 P	355	38.7	..	N	10	37.8	80	NW	8
8:58 P	296	38.8	..	N	6	37.8	80	NW	8
9:15 P	286	38.7	..	NNW	5	37.8	81	NW	8
9:15 P	195	37.8	81	NW	8	..	..	..	..
9:15 P	15	35.7	..	..	..	..	..	..	..
Nov. 7.									
0:05 P	15	42.4	..	..	..	..	..	..	..
0:05 P	195	39.5	53	NW	11	..	..	..	..
0:05 P	363	..	57	NNW	..	39.5	58	NW	11
0:11 P	545	..	60	NW	11	39.8	52	NW	11
0:24 P	868	..	68	NW	..	39.9	51	NW	12
0:36 P	1121	..	82	NW	11	39.9	50	NW	11
0:44 P	1411	..	92	NW	11	40.0	48	NW	11

Date and Hour.	Metres above Sea.	At Different Heights. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1898. Nov. 7.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
0:47 P	1446	. .	72	NW	11	40.1	48	NW	12
1:03 P	1802	. .	39	NW	10	40.7	45	WNW	12
1:50 P	2107	. .	32	NW	12	40.9	45	NW	11
2:17 P	2249	. .	32	NW	12	40.8	44	NW	11
3:03 P	2866	. .	23	NW	. .	40.7	44	NW	8
3:16 P	2779	. .	22	NW	14	40.6	44	NW	8
3:17 P	2038	20.0	17	NNW	14	39.3	45	NW	7
4:23 P	2173	19.5	17	NNW	16	39.1	46	NW	7
4:56 P	1474	. .	32	WNW	15	37.5	49	NW	5
5:19 P	1152	. .	63	. .	8	37.3	49	NW	4
5:30 P	838	. .	59	. .	8	37.4	49	NNW	5
5:40 P	565	. .	55	. .	7	37.4	49	NNW	5
5:51 P	362	. .	52	. .	6	37.3	49	NW	4
5:52 P	313	. .	52	NW	6	37.2	50	NW	4
5:52 P	195	37.2	50	NW	4	. .	. .	. .	. .
5:52 P	15	32.2	. .	. .	. .	. .	. .	. .	. .
Nov. 8.									
0:09 P	15	55.5	. .	. .	. .	. .	. .	. .	. .
0:09 P	195	53.8	42	SW	13	. .	. .	. .	. .
0:09 P	415	48.0	34	SW	. .	53.8	42	SW	13
0:37 P	1158	48.5	23	WSW	. .	53.8	41	SW	13
0:46 P	1332	51.9	16	SW	. .	53.9	41	SW	13
0:58 P	1600	50.9	15	SW	. .	54.7	41	SW	14
1:06 P	1988	50.8	14	WSW	. .	54.8	42	SW	13
1:10 P	1951	51.1	13	WSW	. .	54.8	42	SW	12
1:24 P	1829	53.4	13	WSW	. .	54.8	42	SW	12
1:24 P	195	54.8	42	SW	12	. .	. .	. .	. .
1:24 P	15	57.3	. .	. .	. .	. .	. .	. .	. .
Nov. 24.									
9:20 A	15	40.3	. .	. .	. .	. .	. .	. .	. .
9:20 A	195	37.3	90	NNE	6	. .	. .	. .	. .
9:20 A	405	33.8	100	ENE	8	37.3	90	NNE	6
9:28 A	685	37.3	100	. .	7	37.3	95	NNE	7
9:39 A	850	39.9	68	ENE	7	37.2	95	NNE	7
9:49 A	976	39.4	75	ENE	5	37.2	98	NNE	7
9:59 A	1112	38.8	75	ENE	6	37.2	99	NNE	7
10:11 A	1213	40.2	79	. .	5	37.3	100	NE	6
10:25 A	1254	39.9	82	E	5	37.4	98	NE	6
10:55 A	1375	38.6	100	E	6	37.6	94	NE	5
10:57 A	1709	38.0	100	. .	. .	37.6	94	NNE	5
11:00 A	2113	36.8	97	. .	. .	37.6	94	NNE	5
11:02 A	2235	36.9	97	. .	. .	37.6	95	NNE	5
11:14 A	2507	34.9	100	SE	20	37.6	95	NNE	4
11:29 A	2818	32.6	100	SSE	13	37.6	98	NNE	4
11:35 A	3028	30.6	75	SSE	12	37.6	99	NNE	5
1:17 P	2928	32.5	40	SE	14	37.0	100	NNE	7
1:21 P	2887	31.4	100	SE	11	37.0	100	NNE	6

Date and Hour.	Metres above Sea.	At Different Heights. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1898. Nov. 24.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
1:58 P	2896	33.3	50	SE	. .	36.8	100	NNE	9
2:30 P	2866	31.8	38	SE	12	36.8	100	NNE	8
2:45 P	2735	29.0	100	S	12	36.8	100	NNE	7
2:57 P	2595	31.0	100	S	13	36.8	100	NNE	6
3:16 P	2544	31.4	100	S	12	36.9	100	NNE	7
3:27 P	2482	31.7	100	SSE	11	37.0	100	NNE	7
3:46 P	2052	35.2	100	ESE	12	37.1	100	NNE	7
4:04 P	1912	35.8	100	. .	14	37.2	100	NNE	6
4:28 P	1455	38.8	. .	SE	13	37.3	100	NE	6
4:32 P	1081	39.9	. .	ESE	. .	37.3	100	NE	7
4:43 P	686	33.3	. .	ENE	11	37.4	100	NE	7
4:48 P	195	37.4	100	NE	7	. .	. .	. .	. .
4:43 P	15	39.7	. .	. .	. .	. .	. .	. .	. .
Nov. 25.									
2:45 P	15	32.1	. .	. .	. .	. .	. .	. .	. .
2:45 P	195	28.4	50	WNW	13	. .	. .	. .	. .
2:45 P	530	24.1	62	W	13	28.4	50	WNW	13
2:58 P	793	18.7	72	WNW	13	28.2	50	WNW	13
3:09 P	1067	18.8	45	NW	14	28.0	49	WNW	13
3:21 P	1328	22.8	14	WNW	14	27.9	48	WNW	13
3:31 P	1638	21.3	12	NW	15	27.8	48	WNW	12
3:42 P	1707	21.6	12	WNW	17	27.4	48	WNW	12
3:58 P	1886	20.1	9	WNW	17	27.0	48	WNW	13
4:03 P	1975	19.1	8	WNW	17	26.8	48	WNW	12
4:13 P	2240	15.6	7	WNW	15	26.8	48	WNW	11
4:15 P	2287	15.3	6	WNW	15	26.6	48	WNW	10
4:23 P	2220	16.1	6	WNW	15	26.3	48	WNW	9
4:35 P	1886	18.8	5	WNW	17	26.0	50	WNW	9
4:40 P	1658	19.4	5	WNW	17	25.9	50	WNW	10
4:59 P	1569	20.3	5	. .	. .	25.8	50	WNW	11
5:08 P	1547	21.3	4	. .	17	25.3	50	W	10
5:25 P	1382	21.4	4	. .	17	24.9	51	W	10
5:33 P	1206	18.6	12	. .	. .	24.8	51	W	10
5:37 P	1100	16.1	. .	. .	. .	24.7	51	W	10
5:45 P	962	16.1	32	. .	16	24.7	51	W	10
6:00 P	742	17.8	45	W	12	24.3	51	W	11
6:15 P	496	20.8	50	W	12	24.3	50	W	10
6:23 P	315	23.2	50	WSW	9	24.2	50	W	9
6:23 P	195	24.2	50	W	9	. .	. .	. .	. .
6:23 P	15	26.6	. .	. .	. .	. .	. .	. .	. .
1899. Jan. 11.									
1:47 P	15	21.3	23	. .	. .	. .	. .	. .	. .
1:47 P	195	17.1	25	NW	11	. .	. .	. .	. .
1:47 P	397	13.6	28	NW	10	17.1	25	NW	11
1:56 P	504	12.6	28	N	11	17.4	25	NW	12
2:03 P	584	12.6	28	N	8	17.4	24	NW	13

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1899. Jan. 11.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
2:47 P	389	14.6	28	NW	8	18.5	23	NNW	12
2:47 P	15	21.1	21	..	..	18.5	23	NNW	12
2:52 P	578	12.4	29	NNW	10	18.3	23	NNW	12
3:00 P	706	11.6	30	N	12	17.8	22	NW	13
3:07 P	928	12.8	28	N	8	17.4	23	NW	11
3:19 P	1140	13.4	28	N	12	17.4	22	NW	13
3:31 P	1408	13.8	27	NNW	13	16.7	22	NW	11
3:44 P	1508	14.9	25	NNW	15	16.6	22	NW	13
3:56 P	1559	14.6	25	NNW	14	16.6	22	NW	12
4:16 P	1581	13.4	23	NNW	11	16.5	24	NW	8
4:35 P	1559	12.2	..	NNW	12	15.6	24	NW	10
4:54 P	1393	11.7	..	NNW	13	14.6	24	NW	10
5:13 P	1094	13.4	..	N	16	14.3	25	NW	9
5:24 P	882	14.1	..	N	19	13.7	24	NW	11
5:40 P	785	13.7	..	..	18	13.6	24	NW	11
5:52 P	607	13.6	..	..	16	13.6	24	NW	11
5:54 P	515	..	..	..	..	13.5	24	NW	11
6:01 P	405	10.9	..	..	11	13.5	25	NW	10
6:01 P	195	13.5	25	NW	10	..	..	..	..
6:01 P	15	14.8	24	..	..	..	..	..	..
Feb. 23.									
2:02 P	15	44.2	41	..	..	..	..	..	..
2:02 P	195	40.7	45	W	13	..	..	..	..
2:02 P	407	37.3	48	W	12	40.7	45	W	13
2:20 P	630	33.5	50	W	11	41.1	43	W	12
2:30 P	888	29.0	56	W	..	40.5	47	W	11
2:39 P	1152	24.3	59	W	15	40.5	48	W	13
2.47 P	1418	21.7	54	WNW	18	40.5	48	W	11
2:49 P	1447	22.7	24	WNW	18	40.5	48	W	12
2:58 P	1668	21.0	..	WNW	15	40.3	46	W	15
3:04 P	1876	19.3	..	WNW	12	40.3	48	W	12
3:07 P	1897	19.0	..	WNW	12	40.3	48	W	12
3:20 P	2002	18.0	..	WNW	13	40.2	48	W	11
3:30 P	2132	16.3	..	WNW	12	40.2	48	W	10
4:00 P	2436	13.0	..	WNW	14	39.9	50	W	10
4:15 P	2656	10.7	..	..	13	39.6	51	W	11
4:23 P	2790	9.5	..	..	13	39.8	51	W	9
4:33 P	2959	7.7	..	W	14	39.3	51	W	10
4:55 P	3125	5.7	..	WNW	12	38.9	53	W	10
5:13 P	3215	3.6	..	WNW	13	38.0	55	W	9
5:36 P	2897	7.2	..	W	13	37.0	57	W	10
5:52 P	2644	10.6	..	W	13	36.8	59	W	10
6:15 P	2352	14.8	..	..	12	35.9	59	W	12
6:33 P	2042	16.9	..	W	10	35.7	61	W	11
6:35 P	1917	16.1	..	..	14	35.7	60	W	11
6:42 P	1657	19.2	..	..	16	35.3	60	W	11
6:53 P	1427	22.0	..	WNW	14	35.0	60	W	12

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1899. Feb. 23.		°F	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
7:00 P	1255	22.7	..	..	12	34.9	60	W	12
7:11 P	1062	24.4	..	W	12	34.7	60	W	12
7:30 P	617	28.9	62	..	17	34.0	61	W	12
7:35 P	338	33.1	65	WNW	11	33.8	62	W	11
7:35 P	195	33.8	62	W	11	..	..	..	..
7:35 P	15	36.2	63	..	..	..	..	..	..
Feb. 24.									
11:03 A	15	30.3	41	..	..	..	..	..	..
11:03 A	195	27.2	46	NW	14	..	..	..	..
11:03 A	372	23.8	49	WNW	13	27.2	46	NW	14
11:09 A	569	20.9	50	WNW	11	27.2	45	NW	12
11:21 A	846	17.0	54	WNW	13	27.2	45	WNW	14
11:51 A	797	17.9	55	WNW	15	28.1	42	WNW	13
0:15 P	1108	14.8	55	WNW	16	29.3	39	NW	14
0:22 P	1392	17.1	42	NW	19	29.3	37	NW	16
0:34 P	1762	16.0	38	NW	23	29.3	36	NW	16
0:45 P	2132	12.8	35	NW	18	29.5	35	NW	14
1:10 P	2375	9.0	31	NW	19	29.7	33	NW	14
2:18 P	2720	6.2	..	NW	..	30.9	32	WNW	14
3:52 P	1637	15.2	..	NW	19	31.6	..	WNW	14
4:00 P	1572	15.4	..	NW	19	30.8	..	WNW	14
4:08 P	1359	16.6	..	NNW	22	30.8	..	WNW	13
4:22 P	1190	17.0	23	NNW	..	30.7	..	WNW	12
4:44 P	728	21.0	..	NW	..	30.5	..	WNW	11
5:11 P	765	20.5	..	WNW	11	29.5	..	NW	13
5:23 P	510	23.9	35	WNW	11	29.0	..	WNW	11
5:23 P	195	29.0	27	WNW	11	..	..	..	..
5:23 P	15	31.7	27	..	..	..	..	..	..
Feb. 25.									
7:43 A	15	17.4	55	..	..	..	..	..	..
7:43 A	195	15.8	46	NW	9	..	..	..	..
7:43 A	375	..	..	NW	10	15.8	46	NW	9
7:54 A	524	..	..	WNW	10	16.4	46	NW	9
8:08 A	857	23.5	..	NW	14	17.1	45	NW	9
8:35 A	1183	..	..	NW	12	18.3	42	NW	8
8:56 A	1439	..	..	NW	12	19.4	40	NW	7
9:14 A	1786	..	..	WNW	12	20.4	39	NW	7
9:38 A	1984	..	..	W	14	21.2	38	NW	9
10:11 A	2403	..	..	WNW	15	22.4	38	NW	9
10:48 A	2681	..	..	WNW	15	23.7	37	NW	7
11:02 A	2868	6.5	..	WNW	18	24.8	36	WNW	7
11:08 A	3062	11.8	..	WNW	22	25.2	36	WNW	7
11:25 A	3347	8.8	..	NW	22	26.4	36	WNW	7
11:37 A	3488	8.2	25	NW	22	26.0	35	WNW	9
11:54 A	3392	8.5	26	NW	22	26.5	34	NW	9
0:15 P	3367	9.7	26	NW	..	27.5	33	NW	6
0:32 P	3244	10.2	27	NW	..	28.2	33	WNW	8

Date and Hour.	At Different Heights. Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1899. Feb. 25.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
0:49 P	3092	12.2	26	NW	22	28.3	31	WNW	10
0:56 P	2990	12.7	26	NW	..	28.4	31	WNW	9
1:06 P	2862	13.7	25	NW	..	28.6	30	WNW	8
1:20 P	2632	15.8	24	..	..	29.6	30	NW	7
1:30 P	2812	14.1	25	..	..	30.6	31	WNW	8
2:32 P	2782	15.0	23	NW	..	31.6	28	NW	8
2:45 P	2220	18.2	..	WNW	..	31.7	27	NW	7
2:47 P	2162	17.6	..	WNW	..	31.7	28	NW	7
2:48 P	2130	14.0	..	WNW	..	31.7	28	NW	7
3:03 P	1890	..	..	WNW	..	31.5	30	WNW	7
3:17 P	1807	..	..	WNW	..	31.6	29	WNW	8
3:34 P	1204	..	..	WNW	..	31.6	..	NW	7
3:45 P	922	..	..	NW	..	31.7	..	WNW	10
4:01 P	564	..	..	NW	..	31.4	..	NW	9
4:05 P	483	..	..	NW	..	31.5	..	NW	8
4:05	195	31.5	27	NW	8	..	..	..	..
4:05	15	34.4	27	..	..	..	..	..	..
Feb. 27.									
3:19 P	15	44.6	77	..	..	..	..	..	..
3:19 P	195	43.7	85	WNW	8	..	..	..	..
3:19 P	417	41.2	63	W	..	43.7	85	WNW	8
3:24 P	637	38.7	59	W	..	43.6	82	W	8
3:27 P	717	37.7	51	W	..	43.2	79	W	9
3:32 P	878	37.0	61	W	..	43.0	74	W	10
3:39 P	1190	..	44	W	..	42.9	71	W	10
3:41 P	1246	35.0	37	WSW	..	42.8	72	W	10
3:49 P	1563	30.3	49	WSW	..	42.7	72	W	9
3:56 P	1852	25.3	65	WSW	..	41.8	71	W	9
4:05 P	2039	25.3	64	WSW	..	41.6	70	WNW	9
4:13 P	2131	24.9	52	WSW	..	41.6	70	WNW	9
4:17 P	2172	23.0	37	WSW	..	41.0	69	WNW	9
4:22 P	2348	22.2	46	WSW	..	40.7	66	WNW	9
4:25 P	2454	22.2	46	WSW	..	40.6	66	WNW	9
4:35 P	2432	23.1	34	WSW	..	40.0	64	WNW	8
5:12 P	1423	31.0	24	W	..	38.2	57	WNW	11
5:23 P	1159	33.7	..	W	..	37.6	56	WNW	11
5:36 P	834	32.2	30	WNW	..	37.5	55	WNW	11
5:39 P	716	31.1	56	..	..	37.4	56	WNW	11
5:47 P	568	31.5	56	WNW	..	36.7	56	WNW	11
5:47 P	195	36.7	56	WNW	11	..	..	..	..
5:47 P	15	39.0	54	..	..	..	..	..	..
Feb. 28.									
3:56 P	15	40.0	35	..	..	..	..	..	..
3:56 P	195	38.3	34	S	8	..	..	..	..
3:56 P	606	32.1	35	S	..	38.3	34	S	8
4:07 P	725	32.7	25	SSW	8	38.2	34	S	7
4:23 P	781	33.4	24	SSW	9	38.1	37	S	8

Date and Hour.	At Different Heights. Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1899. Feb. 28.		°F.	p.ct.		m.p.s.	°F	p.ct.		m.p.s.
4:38 P	1552	27.2	25	WSW	12	38.0	39	S	7
4.50 P	1772	25.7	26	WSW	13	37.1	43	S	7
4:55 P	1858	27.7	32	WSW	13	37.4	43	S	7
4:59 P	1780	27.6	31	WSW	13	36.0	46	S	8
5:07 P	2050	27.0	33	WSW	13	35.2	48	S	10
5:27 P	2466	24.9	34	WSW	13	33.1	54	S	9
5:35 P	2606	22.7	33	WSW	13	32.9	57	S	8
5:41 P	2734	21.4	32	WSW	..	32.1	57	S	8
5:42 P	2782	21.4	34	WSW	..	32.1	57	S	8
5:50 P	2981	19.6	40	WSW	15	32.1	57	S	9
6:15 P	3426	14.7	45	..	17	31.0	53	S	10
6:48 P	3646	11.9	45	..	18	29.8	55	S	10
7:26 P	3792	10.7	44	..	20	28.8	59	S	9
7:45 P	3627	13.1	42	..	22	28.8	65	S	9
8:20 P	3306	15.2	44	..	20	28.1	70	SSW	13
8:52 P	2831	20.6	42	..	..	28.1	74	SSW	12
8:55 P	2756	20.4	39	..	..	28.1	74	SSW	13
9:25 P	2457	23.7	32	..	..	28.1	74	SSW	13
9:45 P	2602	21.1	33	..	..	28.1	79	SSW	13
9:57 P	2193	24.8	32	..	..	28.3	79	SSW	13
10:17 P	1950	26.9	31	..	..	29.0	81	SSW	14
10:22 P	1905	27.3	31	..	..	29.0	81	SSW	14
11:15 P	1200	33.9	26	..	..	29.2	84	SSW	12
11:24 P	960	30.6	30	..	..	29.5	84	SSW	12
11:27 P	875	31.7	27	..	..	29.8	84	SSW	12
11:33 P	750	31.2	24	..	..	29.8	84	SSW	12
11:33 P	195	29.8	84	SSW	12	..	..	..	..
11:33 P	15	32.1	86	..	..	..	..	..	..
Mar. 28.									
2:31 P	15	40.6	66	..	..	..	..	..	..
2:31 P	195	37.1	67	E	8	..	..	..	..
2:31 P	380	34.8	94	SSE	6	37.1	67	E	8
2:52 P	407	33.5	96	SSE	6	37.5	66	E	8
3:05 P	600	30.8	..	SSE	..	37.5	65	E	8
3:12 P	835	29.5	86	SSE	8	37.5	65	E	6
3:23 P	742	29.7	97	SSE	..	37.6	64	E	7
3:29 P	1200	26.7	90	SSE	..	38.7	64	E	8
3:32 P	1232	31.0	97	SSE	11	38.7	64	E	8
3:50 P	1414	34.8	94	S	..	39.5	64	E	9
4:19 P	1692	33.4	98	S	..	37.4	65	ENE	9
4:57 P	2200	29.1	99	S	..	38.4	66	E	9
5:12 P	2048	31.0	97	S	14	37.9	65	ESE	10
5:29 P	1460	33.5	92	S	..	37.5	65	ESE	10
5:44 P	1228	34.9	91	SSW	..	37.3	67	ESE	9
5:48 P	1000	30.1	..	S	..	36.5	68	ESE	9
6:14 P	392	36.0	..	SE	..	35.3	70	ESE	9
6:14 P	195	35.3	68	ESE	9	..	..	..	..

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1899. Mar. 28.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*
6:14 P	15	37.2	66	..	..	..	..	..	..
April 28.									
2:05 P	15	69.4	23	..	..	..	..	..	..
2:05 P	195	65.9	25	SW	6	..	..	..	..
2:05 P	337	59.6	28	SSW	6	65.9	25	SW	6
2:40 P	600	54.4	26	SSW	7	65.8	22	SSW	7
3:48 P	306	60.7	24	SSW	5	64.9	18	SSW	6
4:22 P	549	56.4	25	WSW	6	64.0	18	SSW	7
4:35 P	796	54.5	27	WSW	7	63.9	19	SSW	7
5:02 P	798	54.8	27	WSW	7	62.7	18	SSW	7
5:50 P	828	54.6	25	WSW	7	58.8	20	SSW	7
5:58 P	1076	57.4	19	WSW	7	57.9	20	SSW	8
6:28 P	1141	56.4	15	WSW	8	55.0	23	SSW	7
7:15 P	1243	56.5	12	..	8	51.8	26	SSW	9
8:02 P	1086	58.7	10	..	7	49.8	31	SSW	8
8:40 P	1006	59.5	10	..	7	47.7	39	SSW	9
8:53 P	1502	53.6	10	..	8	47.6	44	SW	9
9:14 P	1512	52.9	10	..	8	47.4	41	SW	10
9:20 P	1334	54.2	10	..	8	47.0	42	SW	10
9:35 P	995	59.2	10	WSW	8	46.7	43	SW	9
9:51 P	606	57.0	..	WSW	9	46.7	44	WSW	10
10:00 P	404	56.8	..	WSW	10	46.1	44	WSW	10
10:03 P	248	47.3	..	WSW	..	46.5	43	WSW	10
10:03 P	195	46.5	43	WSW	10	..	..	..	..
10:03 P	15	44.5	68	..	..	..	..	..	..
April 29.									
10:05 A	15	73.4	28	..	..	..	..	..	..
10:05 A	195	70.0	30	WSW	6	..	..	..	..
10:05 A	257	68.3	29	SW	6	70.0	30	WSW	6
11:00 A	411	68.2	28	SW	6	73.2	25	WSW	7
0:05 P	349	71.3	27	SW	5	77.0	20	SW	8
0:15 P	512	69.0	27	SW	6	78.2	20	SW	7
0:50 P	447	71.9	26	SW	5	79.3	19	SW	6
1:11 P	889	64.2	27	SW	7	79.2	18	WSW	7
1:16 P	404	73.2	25	SW	5	79.2	19	WSW	9
1:36 P	1132	59.6	32	SW	8	79.4	21	SW	7
2:45 P	626	68.8	30	SSW	6	79.3	21	SSW	8
3:05 P	804	65.5	31	SW	7	78.4	21	SSW	7
3:15 P	1091	60.8	30	SW	7	78.3	21	SSW	8
3:45 P	858	65.0	29	..	7	76.5	20	SSW	10
4:13 P	1004	62.4	30	SW	8	75.2	21	SSW	10
4:28 P	1315	57.5	30	SW	8	74.9	23	SSW	8
5:13 P	1327	57.4	31	SW	7	70.7	29	SSW	9
5:17 P	1419	59.9	23	SW	6	70.7	32	SSW	8
5:25 P	1522	59.8	23	WSW	6	69.7	34	SSW	8
5:30 P	1214	57.2	..	SW	..	69.0	36	SSW	8
5:42 P	872	63.9	28	SW	7	67.9	37	SSW	9

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1899. April 29.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*
5:53 P	709	65.6	28	SW	9	66.7	39	SSW	10
6:02 P	489	68.1	28	SW	10	65.7	40	SSW	9
6:04 P	416	68.8	29	SW	10	65.5	41	SSW	9
6:10 P	344	67.0	32	SW	10	65.2	42	SSW	9
6:10 P	195	65.2	42	SSW	9	..	..	..	..
6:10 P	15	67.6	45	..	..	..	..	..	..
April 30.									
7:43 A	15	57.0	75	..	..	..	..	..	..
7:43 A	195	55.5	81	SW	9	..	..	..	..
7:43 A	551	64.9	46	W	13	55.5	81	SW	9
7:57 A	654	68.8	33	W	8	55.8	81	SW	9
8:09 A	722	68.7	34	W	7	55.9	81	SW	9
9:09 A	722	69.2	33	WSW	8	63.0	66	SW	9
10:05 A	722	68.8	28	WSW	8	70.8	52	SW	8
10:22 A	812	67.1	30	WSW	8	70.9	51	SW	9
10:48 A	786	69.3	26	WSW	8	73.8	46	SW	8
11:30 A	817	68.0	25	..	8	75.2	43	SW	10
11:43 A	822	65.7	27	..	10	75.2	42	SW	10
11:46 A	928	61.4	52	..	10	75.2	42	SW	10
11:58 A	522	66.7	52	..	10	76.0	41	SW	10
0:16 P	797	63.4	53	..	10	76.8	40	SW	10
0:29 P	903	62.0	55	SW	10	77.1	39	SW	9
0:37 P	394	68.0	50	..	9	77.2	39	SW	9
0:37 P	195	77.2	39	SW	9	..	..	..	..
0:37 P	15	80.4	39	..	..	..	..	..	..
May 22.									
2:40 P	15	53.8	67	..	..	..	..	..	..
2:40 P	195	51.8	70	E	7	..	..	..	..
2:40 P	282	47.8	73	ENE	6	51.3	70	E	7
3:02 P	350	47.5	74	ENE	6	50.9	70	ENE	8
3:32 P	477	45.3	77	ENE	5	50.8	69	E	7
4:09 P	570	44.2	79	ENE	5	49.9	70	ENE	6
4:58 P	620	46.3	75	NNE	4	48.1	72	E	7
5:15 P	750	46.5	73	N	..	47.0	74	E	6
5:22 P	542	46.0	73	ENE	..	46.8	75	E	6
5:30 P	276	44.3	79	E	..	46.5	76	ESE	7
5:30 P	195	46.5	76	ESE	7	..	..	..	..
5:30 P	15	49.0	71	..	..	..	..	..	..
May 23.									
3:15 P	15	63.7	..	..	..	..	..	..	..
3:15 P	195	59.1	45	NE	6	..	..	..	..
3:15 P	488	57.5	47	NE	5	59.1	45	NE	6
3:24 P	594	56.4	48	ENE	5	59.3	45	NE	5
3:24 P	195	59.3	45	NE	5	..	..	..	..
3:24 P	15	63.8	..	..	..	..	..	..	..
May 24.									
7:15 P	15	57.4	52	..	..	..	..	..	..

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1899. May 24.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
7:15 P	195	55.8	53	s	8	..	..	..	..
7:15 P	320	56.0	50	ssw	11	55.8	53	s	8
7:40 P	286	56.1	53	ssw	12	54.7	55	ssw	8
7:56 P	504	55.3	56	..	9	54.6	56	ssw	8
8:01 P	553	56.7	57	..	..	53.9	57	ssw	8
8:11 P	581	56.9	57	..	6	53.7	59	ssw	8
9:56 P	581	57.3	57	..	6	51.4	67	sw	9
10:30 P	759	55.5	52	..	6	51.2	68	sw	10
May 25.									
2:00 A	600	59.4	58	..	6	49.9	59	wsw	8
4:05 A	500	61.5	53	..	6	49.4	62	wsw	7
4:05 A	15	42.9	93	..	..	49.4	62	wsw	7
5:38 A	530	62.5	49	NNW	6	49.5	65	sw	5
5:56 A	579	61.7	48	NNW	6	49.6	66	sw	6
6:10 A	494	63.2	47	NNW	6	50.5	65	sw	5
6:23 A	436	63.5	47	NNW	6	50.9	65	sw	5
6:26 A	429	63.0	48	NNW	5	51.5	65	sw	5
6:26 A	195	51.5	65	sw	5	..	..	..	..
6:26 A	15	51.2	80	..	..	..	..	..	..
5:48 P	15	66.7	53	..	..	..	..	..	..
5:48 P	195	61.5	65	s	8	..	..	..	..
5:48 P	262	59.7	67	..	9	61.5	65	s	8
5:53 P	432	63.1	54	sw	10	61.4	65	s	9
5:59 P	429	61.3	55	sw	8	60.9	66	s	7
6:09 P	903	58.2	53	sw	8	60.0	66	s	8
6:14 P	808	59.7	52	sw	..	59.7	66	s	9
6:25 P	1301	52.3	66	sw	7	58.8	66	s	9
6:50 P	1587	47.9	69	wsw	7	57.8	65	s	8
6:55 P	1455	49.5	67	wsw	7	57.5	65	s	8
7:01 P	1680	46.7	68	wsw	7	56.7	66	ssw	8
8:50 P	1750	45.0	74	..	7	52.0	75	ssw	9
May 26.									
4:37 A	1162	53.8	64	w	6	47.6	100	ssw	8
4:52 A	957	57.4	62	w	5	47.6	100	ssw	9
5:01 A	1308	52.0	65	w	5	47.8	100	ssw	9
5:15 A	996	57.1	61	w	5	48.4	100	ssw	8
5:28 A	665	62.3	57	wnw	6	48.6	100	ssw	10
5:44 A	486	63.3	56	wnw	6	48.8	100	sw	10
5:52 A	333	58.5	65	w	8	49.6	99	sw	10
6:02 A	252	49.7	86	sw	9	49.7	98	sw	10
6:02 A	159	49.7	98	sw	10	..	..	..	..
6:02 A	15	50.3	86	..	..	..	..	..	..
2:27 P	15	81.1	37	..	..	..	..	..	..
2:27 P	195	77.6	40	sw	8	..	..	..	..
2:27 P	391	71.7	44	ssw	8	77.6	40	sw	8
2:38 P	551	69.0	46	sw	..	78.2	41	sw	6
2:45 P	923	63.3	51	sw	9	77.2	42	ssw	8

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1899. May 26.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
2:50 P	672	66.8	48	sw	..	77.8	41	ssw	7
2:57 P	1061	59.8	54	sw	..	77.1	42	sw	7
3:11 P	1593	52.2	60	wsw	10	76.1	42	ssw	8
3:17 P	1615	51.5	61	wsw	10	74.7	46	ssw	7
3:40 P	1671	51.1	63	wsw	8	73.3	48	ssw	9
3:59 P	2328	41.8	79	wsw	8	73.0	47	ssw	10
4:09 P	2192	45.1	74	wsw	8	72.1	48	ssw	9
4:55 P	2707	38.1	82	w	9	70.2	50	ssw	9
5:10 P	2892	37.1	84	w	9	69.9	50	ssw	8
5:15 P	2944	36.9	84	w	8	69.9	50	ssw	8
6:45 P	2563	37.6	86	w	8	65.6	61	ssw	10
7:00 P	1786	48.1	81	..	7	64.6	64	ssw	9
8:09 P	1973	45.0	81	..	8	59.9	78	ssw	9
8:15 P	1865	46.5	78	..	8	59.8	78	ssw	9
8:28 P	1421	53.4	65	..	8	59.8	82	ssw	10
8:33 P	1523	52.2	68	..	8	59.8	84	ssw	10
8:43 P	1119	57.8	61	..	8	59.7	84	ssw	10
9:00 P	687	62.1	59	..	14	58.8	84	sw	10
9:05 P	526	63.3	..	..	18	58.7	85	sw	10
9:15 P	405	61.0	53	..	18	58.6	87	sw	10
9:15 P	195	58.6	75	sw	10	..	..	..	..
9:15 P	15	58.0	87	..	..	..	..	..	..
10:05 P	15	56.1	81	..	..	..	..	..	..
10:05 P	195	57.8	70	sw	9	..	..	..	..
10:05 P	402	59.2	56	..	17	57.8	70	sw	9
10:12 P	611	61.8	53	..	18	57.3	72	sw	9
10:19 P	817	60.2	58	..	13	56.9	73	sw	8
10:30 P	1095	56.9	59	..	9	56.9	70	sw	9
10:50 P	1135	56.3	59	..	9	57.5	65	sw	10
11:00 P	1200	55.5	60	..	9	57.6	63	sw	10
May 27.									
2:05 A	1200	55.5	55	..	10	54.0	65	ssw	8
4:05 A	1200	56.4	48	..	10	52.4	73	sw	8
6:08 A	1200	56.7	44	..	10	54.9	72	sw	8
7:25 A	1200	57.0	46	..	10	60.7	62	sw	8
8:45 A	1200	59.9	35	..	10	68.9	52	sw	9
9:00 A	1315	58.7	37	wsw	10	67.6	49	sw	8
9:38 A	1477	56.6	42	wsw	10	70.3	40	sw	10
9:59 A	1544	56.1	43	wsw	9	71.7	39	sw	11
10:05 A	1732	53.0	47	wsw	8	71.5	37	sw	11
10:15 A	1525	57.0	44	wsw	9	71.7	37	sw	14
10:31 A	1203	60.3	36	wsw	9	72.3	38	ssw	11
10:34 A	1295	59.3	36	..	9	72.5	38	ssw	11
10:43 A	823	60.2	43	sw	10	72.5	37	sw	12
10:54 A	552	63.2	58	ssw	13	72.5	37	sw	12
10:54 A	195	72.5	37	sw	12	..	..	..	..
10:54 A	15	74.9	36	..	..	..	..	..	..

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.				Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.			Metres above sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.					Dir.	Vel.			Dir.	Vel.
1899. May 27.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*	**1899.** June 20.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*
5:03 P	15	73.4	44	..	..	..	..	..	..	10:01 A	195	79.8	56	SSW	8	..	..	..	..
5:03 P	195	68.1	52	SSW	10	..	..	..	..	10:01 A	290	78.2	59	SSW	..	79.8	56	SSW	8
5:03 P	417	62.7	55	SSW	12	68.1	52	SSW	10	10:09 A	388	76.2	60	SSW	8	80.0	56	SW	8
5:11 P	653	59.4	57	SW	13	67.8	52	SSW	12	10:19 A	601	72.0	62	SSW	11	80.9	55	SW	9
5:16 P	963	62.8	52	WSW	17	67.7	52	SSW	12	10:28 A	996	69.8	57	SW	14	81.0	55	SSW	8
5:18 P	977	62.5	52	WSW	17	67.6	52	SSW	11	10:39 A	1336	63.9	65	WSW	14	80.7	56	SSW	9
5:29 P	1413	56.4	56	WSW	17	66.8	54	SSW	10	10:51 A	1643	59.4	68	WSW	15	81.3	53	SSW	9
5:37 P	1782	51.2	51	WSW	16	66.0	55	SSW	10	10:59 A	1886	56.7	67	WSW	14	82.0	54	SW	9
5:43 P	1824	50.5	52	WSW	16	65.2	56	SSW	10	11:13 A	2123	54.7	50	W	14	82.8	53	SW	10
5:58 P	2204	45.3	62	WSW	16	64.7	56	SSW	12	11:28 A	2398	51.8	50	WSW	11	82.9	53	SSW	8
6:15 P	2532	41.2	70	WSW	15	63.1	56	SSW	11	11:45 A	2666	48.4	55	WSW	12	83.4	51	SSW	11
6:21 P	2592	40.4	77	WSW	..	62.7	58	SSW	10	0:07 P	2877	47.0	48	WSW	12	84.0	51	SSW	12
6:23 P	2822	41.0	79	WSW	..	62.6	58	SSW	10	0:23 P	3116	45.0	41	WSW	12	83.1	51	SSW	11
6:30 P	2923	39.5	85	WSW	13	62.0	61	SSW	10	0:28 P	3223	44.5	40	WSW	12	82.9	51	SSW	11
6:40 P	2681	41.3	84	WSW	..	61.6	64	SSW	9	0:42 P	3285	45.8	40	WSW	..	83.0	50	SSW	11
6:49 P	2873	40.1	87	..	13	61.3	66	SSW	10	0:48 P	3330	44.4	40	WSW	14	83.8	50	SSW	12
7:07 P	3167	36.6	93	W	14	60.9	70	SSW	9	0:54 P	3126	46.1	39	..	..	83.8	51	SSW	11
7:30 P	3111	38.3	86	..	13	60.0	76	SSW	9	1:00 P	3008	44.8	62	..	12	81.9	52	SSW	11
8:05 P	2813	39.5	92	..	12	57.9	84	SSW	10	1:07 P	2782	46.4	64	..	13	82.7	52	S	12
8:48 P	2334	44.3	80	..	9	56.6	89	SSW	10	1:12 P	2541	..	66	WSW	..	81.9	58	S	12
9:08 P	2204	46.6	79	..	9	55.9	92	SSW	10	1:21 P	2557	49.3	75	W	15	81.9	53	S	13
9:12 P	2114	47.7	76	..	13	55.9	92	SSW	10	1:44 P	2182	54.7	70	W	16	82.8	50	SSW	13
9:20 P	2004	48.8	77	..	13	55.8	93	SSW	10	1:54 P	1824	58.4	70	..	16	82.4	50	SSW	12
9:35 P	1640	51.9	82	..	14	55.7	93	SSW	10	2:04 P	1536	62.8	59	WSW	16	83.1	49	SSW	14
9:40 P	1554	51.1	92	..	..	55.6	94	SSW	10	2:13 P	1322	62.5	60	SSW	17	82.8	49	SSW	14
9:46 P	1343	54.3	83	..	16	55.5	94	SSW	10	2:23 P	947	67.1	60	SSW	16	82.7	48	SSW	15
9:57 P	940	59.5	68	..	16	55.4	94	SSW	10	2:29 P	652	69.5	59	SSW	16	82.7	48	SSW	16
10:03 P	666	61.8	67	..	17	55.0	94	SSW	10	2:36 P	418	74.0	57	S	16	82.2	48	SSW	13
10:10 P	465	65.0	66	..	17	54.9	94	SSW	9	2:53 P	234	..	53	..	16	82.7	48	SSW	16
10:21 P	414	59.1	76	..	16	55.1	94	SSW	10	2:53 P	195	82.7	48	SSW	16	..	..	..	..
10.30 P	314	56.4	89	SSW	15	55.1	93	SSW	10	2:53 P	15	86.5	44	..	..	..	..	..	..
10:30 P	195	55.1	93	SSW	10	..	..	..	..	Aug. 28.									
10:30 P	15	57.3	98	..	..	..	..	..	..	2:38 P	15	69.3	68	..	..	..	..	..	..
June 14.										2:38 P	195	66.2	69	ENE	8	..	..	..	..
1:58 P	15	89.1	52	..	..	..	..	..	..	2:38 P	404	61.5	88	NE	8	66.2	69	ENE	8
1:58 P	195	87.9	49	WSW	7	..	..	..	..	2.51 P	640	59.4	98	NE	10	65.5	76	ENE	9
1:58 P	328	81.9	54	..	7	87.9	49	WSW	7	2:57 P	906	60.0	97	NE	9	65.4	77	ENE	9
2:13 P	555	78.8	57	WSW	7	88.2	49	WSW	8	3:01 P	920	59.5	98	NE	8	65.0	77	ENE	10
2:29 P	718	76.2	60	WSW	7	88.2	50	WSW	8	3:06 P	980	59.4	100	NE	8	64.8	82	ENE	9
2:45 P	946	72.6	66	WSW	7	88.1	49	WSW	7	3:14 P	1126	58.3	99	ENE	7	64.3	82	ENE	8
3:04 P	1018	71.4	67	WSW	7	88.8	48	SW	6	3:18 P	1006	58.3	100	ENE	..	63.9	82	ENE	9
3:13 P	513	79.2	57	SW	..	89.1	47	SW	7	3:20 P	1016	58.3	100	NE	..	63.9	82	ENE	9
3:18 P	326	84.2	51	..	8	89.1	46	SW	7	3:25 P	1177	57.3	100	NE	7	63.9	83	ENE	10
3:18 P	195	89.1	46	SW	7	..	..	..	..	3:44 P	1207	60.0	79	NE	6	63.8	87	NE	8
3:18 P	15	91.1	41	..	..	..	..	..	..	4:30 P	1372	57.9	83	..	..	62.9	91	NE	8
June 20.										4:35 P	1714	56.8	72	..	6	62.9	93	NE	7
10:01 A	15	83.3	57	..	..	..	..	..	..	4:41 P	1362	55.0	100	..	..	62.8	93	NE	7

Date and Hour.	At Different Heights. Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1899. Aug. 28.		°F	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
5:00 P	1462	55.7	100	..	8	62.4	94	NE	7
5:08 P	1907	54.2	80	NE	8	62.5	95	NE	6
5:10 P	1935	54.5	74	..	8	62.4	95	NE	6
5:16 P	1619	55.0	..	..	..	62.3	95	NE	7
5:18 P	1462	54.6	98	..	..	62.3	95	NE	7
5:21 P	1315	56.0	100	..	9	62.2	95	NE	7
5:35 P	761	60.0	100	NE	5	62.2	95	NE	7
5:52 P	383	60.8	97	NE	8	62.0	96	NE	7
5:52 P	195	62.0	96	NE	7	..	..	..	..
5:52 P	15	65.3	93	..	..	..	..	..	..
Sept. 4.									
9:59 A	15	64.8	53	..	..	..	..	..	..
9:59 A	195	61.5	56	NNW	9	..	..	..	..
9:59 A	406	57.5	63	NNW	9	61.5	56	NNW	9
10:10 A	588	54.5	65	NNW	9	61.7	55	NNW	10
10:20 A	804	51.7	71	NNW	8	61.9	55	NNW	11
10:33 A	962	49.9	78	NNW	8	62.1	54	NW	11
10:36 A	1227	53.7	45	N	8	62.2	53	NW	10
10:42 A	1317	57.7	38	N	9	62.7	53	NNW	10
10:52 A	1104	53.3	46	N	9	63.6	52	NNW	9
11:04 A	1718	55.8	23	N	13	63.9	52	NNW	10
11:15 A	1598	55.3	23	N	12	64.1	51	NNW	10
11:25 A	2076	55.4	20	NNW	10	64.2	51	NNW	9
11:30 A	2098	54.5	18	NNW	10	64.2	50	NNW	9
11:55 A	2209	53.1	15	NNW	9	65.4	49	NNW	11
0:13 P	2165	53.3	14	NNW	9	65.8	48	NNW	10
0:24 P	2110	54.5	13	NNW	9	65.8	48	NNW	9
0:32 P	2856	46.9	11	NNW	13	65.8	48	NNW	10
0:34 P	2976	47.5	9	NW	..	66.2	48	NNW	10
0:45 P	3170	45.5	9	NW	14	66.6	48	NNW	7
1:38 P	3366	42.5	8	NNW	15	67.8	46	NNW	7
3:00 P	3637	40.3	7	NNW	..	68.4	46	N	5
3:30 P	3641	39.5	7	NNW	..	68.4	46	NNW	6
3:40 P	3584	40.9	8	NNW	..	68.4	47	NNW	6
4:04 P	3310	43.4	8	NNW	..	67.6	52	N	6
4:11 P	3225	45.1	7	..	..	67.0	53	NE	6
4:16 P	3114	45.0	7	..	..	66.8	54	ENE	6
4:23 P	2913	47.1	7	..	..	65.8	55	ENE	5
4:38 P	2664	49.4	8	NNW	..	64.7	57	E	6
4:47 P	2350	51.1	8	NNW	..	63.7	58	E	6
4:49 P	2248	51.3	8	N	..	63.7	59	E	6
4:58 P	2175	49.7	..	N	..	63.4	60	E	6
5:00 P	2157	49.0	..	..	..	63.4	60	E	5
5:08 P	1861	51.6	..	N	..	62.7	61	ENE	5
5:15 P	1559	49.4	15	NNE	..	62.5	61	ENE	5
5:18 P	1397	48.7	..	NNE	..	62.2	61	ENE	5
5:23 P	890	54.6	36	..	6	61.8	61	ENE	5

Date and Hour.	At Different Heights. Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1899. Sept. 4.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
5:31 P	414	60.3	46	E	4	61.5	61	ENE	5
5:32 P	299	61.2	50	E	..	61.4	61	ENE	5
5:32 P	195	61.4	61	ENE	5	..	..	..	..
5:32 P	15	63.8	62	..	..	..	..	..	..
Sept. 5.									
1:10 P	15	74.1	44	..	..	..	..	..	..
1:10 P	195	70.1	50	SW	7	..	..	..	..
1:10 P	354	63.4	62	SW	6	70.1	50	SW	7
1:27 P	513	60.8	68	SSW	7	69.8	51	SW	7
1:38 P	685	58.7	75	SW	7	69.2	52	SW	6
1:51 P	934	54.0	84	SW	8	69.4	53	SW	7
2:14 P	1316	48.9	100	SW	8	69.5	54	SW	7
2:28 P	1442	56.8	98	SW	10	69.3	58	SW	7
2:32 P	1820	56.5	98	SW	14	68.5	59	SW	6
2:41 P	2097	55.8	99	WSW	15	68.0	58	SSW	8
2:51 P	2428	56.5	19	WSW	21	69.1	58	SSW	9
2:55 P	2520	56.9	19	WSW	..	69.0	59	SSW	8
2:58 P	2555	56.5	20	WSW	17	69.0	59	SSW	9
3:09 P	2769	52.9	39	WSW	17	68.2	60	SSW	9
3:17 P	2885	51.5	54	WSW	16	68.3	60	SSW	9
3:32 P	3068	49.1	68	WSW	18	66.9	61	SSW	9
3:56 P	3194	47.5	79	WSW	19	66.5	63	SSW	8
4:11 P	2818	52.0	..	WSW	19	65.4	66	SSW	11
4:23 P	2363	56.4	..	WSW	19	64.8	68	SSW	11
4:30 P	2601	54.1	..	WSW	19	63.9	69	SSW	10
4:46 P	2313	56.7	31	WSW	18	63.0	72	SSW	11
5:04 P	1886	62.1	22	WSW	18	61.8	77	SSW	10
5:10 P	1726	63.5	18	WSW	19	61.7	77	SSW	10
5:22 P	1465	64.7	12	WSW	18	61.7	80	SSW	9
5:34 P	1136	56.0	61	SW	18	61.7	80	SSW	8
5:38 P	999	52.3	78	SW	18	61.7	81	SSW	8
5:43 P	883	53.4	78	SW	16	61.7	81	SSW	8
5:55 P	640	56.2	78	SSW	13	61.7	81	SSW	8
6:05 P	418	59.1	78	SSW	12	61.7	81	SSW	8
6:05 P	195	61.7	81	SSW	8	..	..	..	..
6:05 P	15	63.7	81	..	..	..	..	..	..
Sept. 6.									
9:46 A	15	75.6	53	..	..	..	..	..	..
9:46 A	195	72.8	57	NW	12	..	..	..	..
9:46 A	411	67.5	61	NW	12	72.8	57	NW	12
9:53 A	411	66.9	61	NW	12	71.6	56	NW	12
10:00 A	646	63.3	66	NW	13	72.7	54	NW	13
10:09 A	900	59.5	74	NW	13	72.6	52	NNW	12
10:19 A	1206	55.0	84	NW	14	72.9	51	NW	14
10:24 A	1480	50.9	93	NW	18	72.8	50	NW	15
10:30 A	1461	53.9	60	NW	..	72.5	50	NW	12
10:33 A	1826	55.2	35	NW	17	72.7	49	NW	13

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1899. Sept. 6.		°F.	p.ct.		m.p.s.	°F	p.ct.		m.p.s.
10:35 A	1905	54.6	32	NW	..	72.8	49	NW	13
10:39 A	1988	52.4	29	NW	18	73.4	48	NW	14
10:46 A	2036	52.8	26	NW	..	72.8	48	NW	14
10:50 A	2224	50.9	25	NW	19	72.0	48	NW	14
10:52 A	2184	51.3	25	NW	19	72.0	48	NW	14
11:01 A	2400	47.8	22	NW	..	72.2	47	NW	12
11:03 A	2370	48.0	22	NNW	20	72.3	47	NW	12
11:07 A	2161	50.8	22	NW	21	72.5	46	NW	13
11:15 A	2243	49.7	22	NW	20	72.5	45	NW	15
11:15 A	195	72.5	45	NW	15	..	..	..	..
11:15 A	15	75.0	40	..	..	..	..	..	..
Oct. 31.									
9:47 A	15	52.7	68	..	..	..	..	..	..
9:47 A	195	50.5	72	E	11	..	..	..	..
9:47 A	541	44.8	90	E	13	50.5	72	E	11
9:53 A	792	41.4	100	E	..	50.4	72	E	12
10:02 A	849	39.8	100	E	14	49.7	73	E	13
10:08 A	909	39.5	100	..	..	50.0	72	E	12
10:11 A	1157	44.4	36	ESE	15	50.2	72	E	12
10:14 A	1129	44.2	36	ESE	..	50.4	71	E	12
10:27 A	1187	45.5	29	ESE	14	50.4	71	E	12
10:30 A	1267	46.0	25	..	..	50.6	71	E	12
10:33 A	1202	46.2	25	..	..	50.4	72	E	14
10:37 A	952	42.8	..	ESE	14	50.0	72	E	13
10:40 A	804	40.6	100	E	..	49.8	73	E	13
10:42 A	748	40.9	91	E	..	49.8	73	E	12
11:42 A	15	52.7	70	..	..	50.0	75	E	14
11:42 A	510	44.9	95	E	14	50.0	75	E	14
11:45 A	725	..	100	E	..	50.0	75	E	15
11:51 A	784	40.9	100	E	16	50.0	74	E	14
11:58 A	904	39.6	100	ESE	..	49.8	74	E	13
0:03 P	1080	45.1	.	ESE	15	50.0	74	E	13
0:07 P	1183	45.1	35	ESE	14	50.1	74	E	13
0:11 P	1155	44.8	32	ESE	14	50.1	74	E	13
0:45 P	1149	42.2	28	ESE	..	49.7	77	E	11
0:59 P	1188	46.2	23	ESE	..	49.7	78	E	13
1:13 P	1352	43.0	98	ESE	20	49.6	79	E	12
1:16 P	1518	43.2	100	ESE	20	49.6	79	E	12
1:56 P	1790	40.7	100	..	21	48.9	85	ENE	13
1:58 P	2150	44.0	100	..	22	48.9	86	ENE	13
2:32 P	2540	40.0	100	SE	24	48.9	88	ENE	12
2:32 P	195	48.9	88	ENE	12	..	..	..	..
2:32 P	15	52.2	84	..	..	..	..	..	..
Nov. 2.									
4:04 P	15	40.5	31	..	..	..	..	..	..
4:04 P	195	38.4	32	NNW	10	..	..	..	..
4:04 P	377	35.1	33	NNW	10	38.4	32	NNW	10

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1899. Nov. 2.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
4:16 P	870	27.1	36	NNW	11	38.1	32	NNW	9
4:25 P	980	25.2	42	NNW	11	37.6	33	NW	9
4:29 P	1028	24.7	44	NNW	11	37.5	33	NW	9
4:35 P	1512	34.5	30	N	12	37.3	33	NW	11
4:37 P	1773	35.4	26	NNW	12	37.2	33	NW	11
4:52 P	2066	37.2	23	NNW	16	36.7	34	NNW	10
5:30 P	2196	38.3	21	..	16	34.7	39	NNW	7
5:45 P	2261	39.7	18	..	15	33.8	41	NNW	5
7:00 P	2340	38.2	11	..	15	32.4	45	NNW	7
8:00 P	2661	37.1	8	..	15	31.3	49	NNW	8
8:15 P	2700	37.0	7	..	15	31.0	50	NNW	7
8:40 P	2700	36.7	7	..	15	30.4	51	N	7
9:00 P	2794	36.1	7	..	14	30.4	52	N	7
9:35 P	2700	36.6	6	..	15	30.1	54	N	7
10:00 P	2700	37.0	5	..	14	30.1	55	N	6
10:40 P	2700	36.7	5	..	14	29.8	57	N	7
11:24 P	2700	36.7	6	..	14	29.6	58	N	6
11:55 P	2700	36.9	7	..	14	29.4	59	N	6
Nov. 3.									
0:28 A	2700	36.9	9	..	13	29.4	61	N	5
1:00 A	2700	36.7	11	..	12	29.4	61	N	5
1:00 A	195	29.4	61	N	5	..	..	..	..
1:00 A	15	30.4	62	..	..	..	..	..	..
1900. Jan. 30.									
1:20 P	15	29.4	34	..	..	..	..	..	..
1:20 P	195	25.4	39	SW	11	..	..	..	..
1:20 P	518	20.2	40	SW	11	25.4	39	SW	11
1:32 P	839	15.1	44	SW	11	25.5	38	SW	10
1:53 P	897	13.6	..	SW	..	26.5	36	SW	10
2:08 P	1180	9.4	43	WSW	18	27.1	34	SW	9
2:26 P	892	14.2	43	SW	10	27.3	32	SW	8
2:32 P	933	14.0	43	SW	12	27.3	33	SW	7
2:45 P	469	20.8	36	SW	12	27.8	28	SW	11
2:45 P	15	31.3	25	..	..	27.8	28	SW	11
3:55 P	601	21.0	36	SSW	12	27.2	34	SSW	11
3:55 P	15	29.6	28	..	..	27.2	34	SSW	11
4:10 P	908	15.7	39	SW	14	26.5	34	SSW	12
4:25 P	1169	13.2	43	WSW	21	26.0	37	SSW	11
4:26 P	1175	16.4	24	WSW	23	26.0	38	SSW	11
4:30 P	1217	16.4	24	WSW	24	25.8	29	SSW	11
4:40 P	1467	15.1	30	WSW	24	25.4	42	SSW	12
4:46 P	1502	14.2	32	WSW	23	25.3	45	SSW	9
5:00 P	1936	11.4	32	WSW	24	24.9	50	SSW	9
5:02 P	1988	12.2	40	SW	23	24.8	52	SSW	9
5:10 P	2059	10.2	45	SW	13	24.7	54	SSW	9
5:16 P	2122	9.2	53	SW	16	24.7	56	SSW	8

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1900. Jan. 30.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
5:17 P	2156	9.1	55	..	16	24.6	56	SSW	8
5:18 P	2104	9.1	55	..	16	24.6	57	SSW	8
5:25 P	1942	12.8	40	..	19	24.5	60	S	8
5:27 P	1987	12.0	40	..	..	24.5	61	S	7
5:37 P	1302	17.2	30	..	..	24.5	62	S	7
5:41 P	1182	16.2	35	..	..	24.4	63	S	7
5:45 P	1107	17.1	45	..	25	24.3	63	S	7
6:05 P	527	25.2	72	..	17	24.1	65	S	7
6:09 P	246	27.0	69	SSE	13	24.0	67	S	7
6:09 P	195	24.0	67	S	7	..	..	..	..
6:09 P	15	24.6	65	..	..	..	..	..	..
Feb. 6.									
11:19 A	15	29.2	45	..	..	..	..	..	..
11:19 A	195	26.3	48	SSW	8	..	..	..	..
11:19 A	390	26.1	55	SW	13	26.3	48	SSW	8
11:26 A	575	30.2	44	SW	21	26.5	47	SSW	8
11:46 A	766	32.9	37	WSW	24	26.8	47	SSW	9
0:02 P	1184	26.8	100	WSW	26	26.9	49	SSW	8
0:08 P	1327	26.0	100	WSW	26	27.0	50	SSW	9
0:15 P	1422	24.6	100	WSW	28	27.1	51	SSW	8
0:45 P	1776	22.5	100	WSW	27	28.0	57	SSW	8
0:50 P	1965	22.6	100	WSW	27	28.1	55	SSW	8
1:48 P	1650	25.3	100	W	29	29.1	71	SSW	11
2:06 P	2112	..	100	W	..	29.4	76	SSW	9
2:15 P	2078	19.8	100	W	23	29.8	77	SSW	10
2:20 P	2080	21.8	100	W	..	30.2	78	SSW	10
2:28 P	2214	21.0	100	W	..	30.5	79	SW	9
2:30 P	2140	19.9	100	..	22	30.5	79	SW	9
2:40 P	1952	20.9	100	..	28	30.8	81	SW	8
2:47 P	1701	23.0	100	..	30	30.9	82	SW	7
2:49 P	1484	21.9	100	..	..	30.9	82	SW	7
2.57 P	1209	23.6	..	..	..	31.0	82	SW	7
3:25 P	1067	24.6	100	..	19	31.9	84	SW	6
3:35 P	943	25.1	100	W	19	31.5	83	SW	6
3:44 P	904	26.4	100	W	17	33.3	82	SW	7
4:14 P	898	26.3	82	WNW	15	33.6	81	WSW	6
4:26 P	679	28.2	78	WNW	13	33.5	81	WSW	6
4:39 P	487	30.2	84	W	11	33.4	81	WSW	7
4.39 P	195	33.4	81	WSW	7	..	..	..	..
4:39 P	15	36.0	78	..	..	..	..	..	..
Feb. 8.									
3:11 P	15	36.7	100	..	..	..	..	..	..
3:11 P	195	35.4	97	ESE	7	..	..	..	..
3:11 P	335	36.8	97	E	6	35.4	97	ESE	7
3:20 P	458	39.7	100	SSE	6	35.3	98	ESE	7
3:44 P	1038	46.0	100	SSW	8	35.0	98	ESE	7
4:06 P	1080	46.6	100	..	7	34.2	100	ESE	7

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1900. Feb. 8.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
4:15 P	1240	45.8	100	..	8	33.7	98	ESE	7
4:35 P	1495	44.1	100	S	9	33.6	99	ESE	8
5:02 P	1607	44.0	100	S	10	33.9	100	ESE	9
5:26 P	1695	43.8	100	S	10	34.1	100	ESE	9
5:40 P	1932	42.1	100	..	11	34.2	100	ESE	8
5:52 P	1932	42.5	100	..	11	34.4	100	ESE	8
6:30 P	1553	45.1	100	..	11	34.6	100	ESE	8
6:50 P	1373	46.8	100	..	11	34.7	100	ESE	10
7:37 P	1312	47.0	100	..	11	35.0	100	ESE	9
8:20 P	840	48.9	100	..	12	35.3	100	ESE	7
8:40 P	492	41.7	100	..	..	35.3	100	ESE	7
9:15 P	463	36.7	100	..	12	35.3	100	ESE	7
10:00 P	470	40.8	100	..	12	35.2	100	ESE	6
10:00 P	195	35.2	100	ESE	6	..	..	..	..
10:00 P	15	37.2	98	..	..	..	..	..	..
Feb. 10.									
2.45 P	15	33.4	52	..	..	..	..	..	..
2:45 P	195	29.8	56	NE	7	..	..	..	..
2:45 P	342	26.8	63	NE	8	29.8	56	NE	7
2:58 P	598	23.0	72	ENE	9	30.1	57	NE	7
3:27 P	780	23.7	87	NE	7	30.2	56	NE	6
4:21 P	976	24.0	85	NE	6	29.8	59	NE	5
4:30 P	508	22.8	66	ENE	8	29.7	59	NE	5
4:32 P	503	23.8	66	..	8	29.7	59	NE	5
4:32 P	195	29.7	59	NE	5	..	..	..	..
4:32 P	15	32.4	56	..	..	..	..	..	..
June 18.									
1:19 P	15	61.5	74	..	..	..	..	..	..
1:19 P	195	57.0	82	NE	9	..	..	..	..
1:19 P	382	52.3	100	NE	..	57.0	82	NE	9
1:28 P	616	56.5	56	NE	..	56.8	84	NE	10
1:30 P	675	57.0	56	NE	..	55.7	84	NE	9
1:38 P	850	55.1	62	NE	..	56.4	84	NE	9
1:45 P	1021	51.8	70	NE	..	57.0	83	ENE	10
1:48 P	1258	49.2	75	NE	..	57.1	82	ENE	9
1:49 P	1340	49.7	50	NE	..	57.1	82	ENE	9
1:55 P	1409	49.0	50	NE	..	57.1	82	ENE	10
2:10 P	1851	43.5	59	NNE	..	57.2	82	ENE	10
2:20 P	1890	42.9	60	NNE	..	57.6	82	ENE	10
2:43 P	2463	35.1	60	NNE	..	57.8	79	ENE	9
2:57 P	2721	32.3	63	NNE	..	58.2	79	ENE	8
2:59 P	2846	34.6	29	NNE	..	58.2	79	ENE	8
3:02 P	2873	34.5	25	NNE	..	58.8	78	ENE	8
3:25 P	2763	34.0	19	NNE	..	59.1	77	ENE	7
3:39 P	2932	35.1	20	NNE	..	59.0	76	ENE	7
3:48 P	3155	32.1	18	NNE	..	58.2	75	ENE	8
4:10 P	3236	31.0	18	NNE	..	57.8	76	ENE	8

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1900. June 18.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
4:31 P	3227	30.1	20	NNE	..	57.7	77	ENE	7
4:38 P	3278	30.0	20	NNE	..	57.7	78	ENE	7
5:02 P	3349	29.0	14	NNE	..	57.7	76	ENE	7
5:41 P	3435	28.7	6	NNE	..	56.7	74	ENE	7
6:03 P	3352	28.2	9	..	..	56.2	75	ENE	6
6:22 P	3042	30.4	11	NE	..	55.8	75	ENE	6
7:47 P	2911	31.3	12	NE	..	52.1	92	NNE	7
8:06 P	2966	30.8	8	..	..	52.0	94	NE	7
8:28 P	2595	36.2	10	..	..	51.8	95	NNE	7
8:45 P	2103	40.1	17	..	..	51.9	93	NE	7
8:47 P	2020	38.2	75	..	..	51.9	93	NE	7
8:53 P	1930	38.2	75	..	..	51.9	93	NE	7
9:02 P	1449	45.4	76	..	..	52.0	92	NE	7
9:20 P	970	51.2	72	..	..	52.0	89	NE	7
9:40 P	610	55.6	67	..	..	52.0	84	NE	7
9:43 P	487	56.2	55	..	..	52.0	83	NE	7
9:46 P	220	54.3	85	..	..	52.0	83	NE	7
9:46 P	195	52.0	83	NE	7	..	..	..	..
9:46 P	15	49.8	100	..	..	..	..	..	..
11:30 P	15	47.1	100	..	..	..	..	..	..
11:30 P	195	50.7	91	NNE	6	..	..	..	..
11:30 P	530	55.5	57	..	12	50.7	91	NNE	6
11:40 P	880	50.0	64	..	12	50.3	94	N	6
11:46 P	1330	43.3	65	..	13	50.2	95	N	6
11:56 P	1830	37.8	69	..	13	49.9	95	N	7
June 19.									
0:06 A	1910	36.9	56	..	..	49.9	95	NNE	6
0:08 A	1940	37.5	42	..	9	49.9	95	NNE	6
0:17 A	2310	34.2	24	..	9	49.9	95	NNE	6
0:25 A	2510	33.0	19	..	9	49.9	93	NNE	6
0:40 A	2720	31.2	15	..	8	49.9	92	NNE	6
1:00 A	2660	32.3	15	..	8	50.4	87	NNE	7
2:00 A	2660	32.4	14	..	8	50.2	84	N	7
3:00 A	2660	32.2	14	..	8	49.8	81	NNE	7
4:00 A	2725	31.8	14	..	8	49.5	80	NNE	6
5:00 A	2848	31.0	14	..	9	50.6	76	NNE	8
6:00 A	2853	30.3	19	..	9	53.6	71	NNE	7
7:00 A	2938	29.8	21	..	9	52.9	70	NNE	6
7:10 A	2948	29.8	21	NE	9	53.3	70	NE	5
8:00 A	2930	30.0	23	..	9	58.9	67	NE	6
8:31 A	2948	29.2	22	NE	10	60.4	62	NE	6
8:36 A	3014	29.0	21	ENE	10	60.7	62	NE	7
9:00 A	2980	28.7	24	..	10	60.6	62	NE	8
9:30 A	3036	28.7	23	NE	10	60.8	62	NE	8
9:44 A	2841	30.7	24	NE	12	62.0	61	NE	8
9:46 A	2711	31.5	35	..	12	62.1	61	NE	7
9:58 A	2028	37.0	35	NE	12	62.0	61	ENE	7

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1900. June 19.		°F	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
10:08 A	1758	42.0	36	NE	12	61.9	63	ENE	7
10:20 A	962	52.2	62	NNE	17	61.5	63	ENE	7
10:40 A	937	52.5	64	NNE	..	62.0	63	ENE	7
10:48 A	765	54.0	52	NNE	11	62.1	63	ENE	7
10:48 A	549	55.4	72	NNE	7	62.3	62	ENE	7
10:48 A	195	62.3	62	ENE	7	..	..	..	..
10:48 A	15	65.0	59	..	..	..	..	..	..
2:51 P	15	65.5	51	..	..	..	..	..	..
2:51 P	195	63.1	55	ENE	6	..	..	..	..
2:51 P	544	58.5	31	NE	7	63.1	55	ENE	6
3:04 P	918	54.4	44	NE	9	63.7	53	ENE	5
3:25 P	1300	48.4	55	NE	10	64.2	52	ENE	5
3:47 P	2005	38.3	64	NE	13	63.8	49	E	5
4:04 P	2420	33.0	68	NE	11	63.2	51	E	5
4:16 P	2822	29.9	46	NE	14	62.7	51	E	5
4:37 P	2755	29.8	40	NE	..	63.7	49	ENE	3
4.50 P	3582	22.6	37	NE	..	63.9	51	ENE	3
5:15 P	4018	18.5	36	ENE	..	63.7	51	NE	2
5:48 P	4054	18.4	..	ENE	..	61.7	60	NNE	3
6:02 P	4109	17.4	..	ENE	..	60.8	66	NE	3
6:18 P	4211	15.9	..	ENE	..	60.2	67	ENE	3
6:46 P	3771	18.8	..	ENE	..	59.3	63	NE	3
7:15 P	3697	19.9	..	NE	14	59.6	52	ENE	2
7:56 P	3786	18.8	..	NE	..	59.4	50	ESE	2
8:02 P	3504	21.0	..	NE	10	58.8	59	SE	1
8:10 P	3254	23.6	..	NE	10	58.8	59	..	0
8:25 P	2904	28.6	35	..	10	58.3	63	SE	1
8:31 P	2720	29.1	..	..	14	57.9	65	SE	2
8:35 P	2428	33.9	95	..	..	57.7	65	SE	1
8:44 P	2247	37.1	95	..	14	57.8	63	SE	1
8:56 P	1914	43.5	86	..	15	57.8	63	SE	1
9:02 P	1567	47.4	77	..	8	57.8	68	SE	1
9:09 P	954	55.0	63	..	6	57.8	55	SE	1
9:15 P	480	59.4	51	..	..	57.8	54	..	0
9:15 P	195	57.8	54	..	0	..	..	..	..
9:15 P	15	52.6	98	..	..	..	..	..	..
June 21.									
9:17 A	15	78.0	46	..	..	..	..	..	..
9:17 A	195	74.8	47	WNW	8	..	..	..	..
9:17 A	872	66.9	..	NW	..	74.8	47	WNW	8
9:55 A	1150	63.4	..	WNW	..	77.0	43	WNW	8
10:16 A	1251	60.4	..	WNW	..	77.8	41	WNW	7
10:40 A	1511	56.3	..	WNW	..	78.5	39	WNW	8
11:20 A	1608	55.8	..	W	..	79.7	37	WNW	7
11:33 A	1236	60.3	..	W	..	80.1	37	W	6
11:40 A	972	66.0	..	..	..	80.6	37	W	7
11:40 A	195	80.6	37	W	7	..	..	..	..

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1900. June 21.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*
11:40 A	15	81.7	36	..	..	..	..	..	..
June 22.									
0:14 P	15	84.7	44	..	..	..	..	..	..
0:14 P	195	83.3	47	wsw	7	..	..	..	..
0:14 P	950	68.2	73	wsw	8	83.3	47	wsw	7
0:19 P	832	71.0	66	wsw	7	83.3	47	wsw	8
0:33 P	1253	63.9	73	wsw	9	84.9	46	sw	8
0:39 P	1832	56.1	81	wsw	..	84.8	46	sw	9
0:43 P	1722	57.2	..	wsw	..	84.3	45	sw	9
0:56 P	2019	51.8	100	wsw	10	82.4	46	sw	8
1:02 P	2077	49.2	100	wsw	11	83.0	46	sw	9
1:04 P	2041	49.2	100	wsw	..	84.0	46	sw	8
1:06 P	1881	51.2	91	wsw	..	84.8	46	sw	8
1:10 P	1483	59.0	86	wsw	10	83.8	46	sw	8
1:15 P	1362	59.8	86	sw	10	83.5	47	sw	7
1:20 P	869	67.0	51	sw	9	80.6	50	sw	7
1:22 P	870	66.8	..	ssw	..	80.3	50	ssw	7
1:23 P	684	71.8	..	s	7	80.2	50	ssw	7
1:23 P	195	80.2	50	ssw	7	..	..	..	..
1:23 P	15	81.1	48	..	..	..	..	..	..
July 17.									
11:28 A	15	92.5	54	..	..	..	..	..	..
11:28 A	195	89.7	60	wsw	6	..	..	..	..
11:28 A	232	..	59	sw	8	89.7	60	wsw	6
11:40 A	462	..	60	wsw	8	88.8	59	w	8
11:54 A	914	..	61	wsw	10	88.8	59	w	8
0:02 P	1336	..	62	w	11	88.5	60	w	7
0:13 P	1652	..	56	wsw	15	88.1	60	wsw	7
0:29 P	1910	..	61	w	16	88.0	60	wsw	8
0:48 P	2644	56.1	64	w	15	90.0	57	wsw	9
0:58 P	2776	54.5	67	w	14	88.7	57	wsw	8
1:14 P	2821	54.1	59	w	14	88.2	60	wsw	9
1:32 P	2831	54.7	56	wnw	14	89.9	58	wsw	6
1:50 P	2940	53.2	56	wnw	12	89.1	58	wsw	7
1:59 P	3188	50.1	56	w	11	89.1	59	wsw	7
2:31 P	3259	49.7	56	w	12	90.9	54	wsw	7
2:53 P	3510	45.8	57	w	12	90.3	54	wsw	9
3:05 P	3558	45.1	55	w	12	91.3	52	wsw	9
3:25 P	3538	46.0	54	w	12	91.3	53	wsw	8
3:44 P	3507	45.7	58	..	..	91.1	54	wsw	8
4:03 P	3175	51.2	49	w	..	90.0	55	wsw	7
4:16 P	3196	49.4	53	w	..	91.1	54	wsw	7
4:35 P	2824	53.4	52	w	..	91.4	52	wsw	9
4:45 P	2648	56.3	49	..	..	91.3	52	wsw	9
4:55 P	2451	58.9	49	..	..	91.3	52	wsw	8
5:06 P	2035	64.2	47	..	..	91.2	52	wsw	9
5:10 P	1974	63.1	69	w	15	91.2	52	wsw	9

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1900. July 17.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*
5:15 P	1900	62.4	84	..	16	91.2	52	wsw	9
5:25 P	1420	68.7	84	wsw	11	91.3	53	sw	7
5:27 P	1398	69.4	84	wsw	11	90.0	57	sw	6
5:42 P	844	78.6	72	wsw	9	89.2	61	sw	8
5:53 P	581	82.5	71	sw	9	88.2	64	sw	8
6:01 P	363	85.1	72	sw	10	87.5	66	sw	9
6:01 P	195	87.5	66	sw	9	..	..	..	..
6:01 P	15	91.5	58	..	..	..	..	..	..
July 18.									
11:09 A	15	91.5	60	..	..	..	..	..	..
11:09 A	195	88.6	64	wsw	6	..	..	..	..
11:09 A	464	83.5	75	wsw	7	88.6	64	wsw	6
11:11 A	506	82.4	77	wsw	7	88.7	64	wsw	7
11:24 A	805	79.2	85	wsw	8	89.0	53	wsw	8
11:36 A	910	78.5	82	wsw	10	89.5	52	wsw	9
11:46 A	1365	67.8	100	wsw	..	92.9	51	wsw	10
11:49 A	1466	70.7	58	w	13	91.0	52	wsw	9
11:55 A	1696	67.0	95	w	..	92.0	51	wsw	8
0:02 P	1927	64.3	57	w	13	92.6	50	wsw	8
0:10 P	2401	58.0	56	..	..	92.8	50	wsw	9
0:17 P	2835	52.8	55	w	..	93.1	50	wsw	10
0:26 P	2847	52.5	48	w	19	92.7	49	wsw	10
0:40 P	2198	61.0	72	..	..	93.6	48	wsw	10
0:41 P	2152	61.5	72	w	19	93.6	48	wsw	10
0:49 P	2021	63.1	58	w	22	93.5	48	wsw	11
0:56 P	1736	67.0	65	..	15	93.4	47	wsw	10
1:00 P	1414	71.0	82	wsw	12	93.7	47	wsw	11
1:03 P	1334	72.4	84	wsw	11	93.7	47	wsw	10
1:12 P	901	78.8	72	wsw	11	93.7	47	wsw	11
1:16 P	781	80.5	67	..	..	93.8	47	wsw	11
1:25 P	436	84.7	62	wsw	..	92.2	49	wsw	12
1:25 P	195	92.2	49	wsw	12	..	..	..	..
1:25 P	15	94.5	45	..	..	..	..	..	..
July 19.									
11:06 A	15	79.6	40	..	..	..	..	..	..
11:06 A	195	78.7	43	nw	9	..	..	..	..
11:06 A	373	71.5	53	nw	8	78.7	43	nw	9
11:18 A	861	65.7	57	nw	8	79.3	43	wnw	8
11:24 A	686	67.0	60	nw	7	79.5	43	wnw	8
11:27 A	894	63.4	66	nw	8	79.7	42	nw	8
11:58 A	487	70.9	53	nw	7	79.4	41	nw	8
0:11 P	325	73.4	40	wnw	..	81.1	40	wnw	9
0:11 P	15	81.7	38	..	..	81.1	40	wnw	9
0:54 P	472	73.9	43	wnw	6	82.5	39	wnw	7
1:02 P	883	65.7	58	wnw	7	82.7	39	wnw	8
1:22 P	1668	53.4	73	nw	8	82.4	39	nw	8
1:54 P	386	74.4	38	wnw	7	82.9	40	wnw	8

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1900. July 19.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
1:54 P	15	84.0	37	..	..	82.9	40	WNW	8
2:19 P	887	67.2	59	WNW	7	83.1	38	WNW	10
2:30 P	847	67.7	58	WNW	8	83.0	38	WNW	7
2:54 P	1469	57.4	73	NW	8	83.4	37	WNW	7
3:23 P	510	76.9	33	WNW	..	84.0	37	WNW	6
3:35 P	496	75.5	43	WNW	6	83.7	37	WNW	6
3:35 P	15	84.7	34	..	..	83.7	37	WNW	6
4:00 P	1339	61.4	68	NW	..	83.1	38	WNW	6
4:03 P	1093	64.4	68	NW	7	83.2	37	WNW	6
4:19 P	400	76.6	33	WNW	6	83.1	38	NW	8
4:19 P	15	84.6	34	..	..	83.1	38	NW	8
4:47 P	2657	56.7	..	NNW	..	82.8	39	WNW	7
4:59 P	3084	51.0	..	NNW	..	82.4	39	WNW	7
5:08 P	3519	48.6	..	NNW	15	81.8	40	WNW	6
5:19 P	3127	50.7	..	NNW	14	81.8	40	WNW	7
5:32 P	4074	39.6	..	NNW	17	81.5	40	WNW	7
5:56 P	4063	39.8	..	NNW	..	80.6	42	NW	6
6:25 P	3810	..	..	NNW	12	78.7	45	NW	6
6:41 P	4815	..	..	NNW	..	77.7	45	NW	6
7:06 P	4114	39.5	..	NNW	15	76.8	50	NW	6
7:15 P	3984	41.2	..	NNW	13	75.9	51	NW	5
7:32 P	3506	45.6	39	NNW	13	74.9	53	NW	5
7:38 P	2595	52.1	38	..	..	74.8	53	NW	4
7:55 P	1712	56.4	32	..	10	73.4	55	NW	5
8:15 P	1135	63.2	60	..	7	73.3	56	NW	5
8:22 P	1378	59.4	70	..	7	73.2	56	NW	5
8:37 P	1052	65.5	62	N	7	73.1	57	NW	5
8:49 P	684	71.2	55	N	6	72.9	58	NW	5
9:02 P	342	76.9	51	N	8	72.2	58	NW	5
9:03 P	307	76.7	51	N	8	72.2	58	NW	5
9:03 P	195	72.2	58	NW	5	..	..	..	..
9:03 P	15	62.5	91	..	..	..	..	..	..
July 20.									
2:48 P	15	76.6	60	..	..	..	..	..	..
2:48 P	195	73.6	65	ESE	8	..	..	..	..
2:48 P	394	68.7	72	SE	7	73.6	65	ESE	8
3:13 P	779	63.8	88	SSE	8	73.5	65	SE	7
3:34 P	921	60.9	93	SSE	6	72.4	67	SE	7
3:50 P	932	62.4	73	S	6	72.4	68	SSE	7
4:00 P	1079	60.8	82	S	6	72.3	68	SSE	7
4:40 P	942	64.4	46	S	6	71.3	68	SSE	7
5:01 P	1007	63.0	47	..	..	71.8	69	SSE	8
5:08 P	1456	60.9	40	S	5	69.6	70	SSE	8
5:21 P	1147	63.7	44	S	5	69.4	71	SSE	8
5:23 P	1032	64.7	39	S	..	69.3	71	SSE	8
5:28 P	813	63.4	43	..	..	68.9	71	S	8
5:37 P	467	64.4	56	SE	8	68.8	71	S	8

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1900. July 20.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
5:37 P	195	68.8	71	S	8	..	..	..	..
5:37 P	15	73.9	64	..	..	..	..	..	..
July 21.									
10:45 A	15	82.0	58	..	..	..	..	..	..
10:45 A	195	77.7	64	SSW	10	..	..	..	..
10:45 A	508	67.5	96	SSW	11	77.7	64	SSW	10
10:47 A	547	67.9	96	SSW	11	77.7	64	SSW	10
10:59 A	816	68.9	89	SW	11	78.1	64	SSW	10
11:10 A	1267	62.7	100	SW	13	75.5	67	SSW	9
11:18 A	1545	64.7	77	SW	13	75.0	69	SSW	11
11:32 A	1732	62.7	82	SW	12	75.2	70	SSW	10
0:07 P	1408	60.7	100	SW	11	75.9	70	SSW	10
0:18 P	2126	57.4	93	SW	11	77.3	70	SSW	9
0:39 P	2372	53.5	81	SW	12	74.2	75	SSW	12
1:06 P	1896	61.1	88	SW	10	75.3	74	SSW	10
1:26 P	2796	48.9	100	SW	13	74.2	77	SSW	12
1:43 P	2856	50.8	100	SW	14	74.7	79	SSW	12
1:54 P	3027	49.9	79	SW	14	75.0	79	SSW	12
2.07 P	3212	47.7	83	..	14	74.5	81	SSW	11
2:25 P	3412	45.3	83	SW	16	74.2	81	SSW	12
2:35 P	3005	49.9	87	..	14	74.1	82	SSW	11
2:42 P	2846	50.9	89	..	14	73.7	84	SSW	10
2:50 P	2630	53.4	96	..	14	73.6	84	SSW	12
2:55 P	2430	55.4	99	..	12	73.4	84	SSW	10
3:05 P	2485	56.2	89	..	13	73.6	84	SSW	10
3:22 P	2057	58.7	100	..	11	74.0	84	SSW	11
3:27 P	2057	58.7	97	WSW	11	74.2	82	SSW	9
3:33 P	1872	60.7	99	WSW	10	74.7	83	SSW	9
3:39 P	1753	61.8	93	WSW	10	74.1	84	SSW	9
3:54 P	1467	65.7	89	..	11	75.1	82	SSW	9
3:56 P	1472	65.7	88	SW	11	75.1	82	SSW	8
4:08 P	1092	69.0	83	SW	11	74.9	83	SSW	8
4:17 P	852	70.5	85	SSW	12	74.5	83	SSW	7
4:19 P	825	67.7	100	SSW	12	74.3	84	SSW	8
4:33 P	547	67.7	100	SSW	10	73.8	86	SSW	8
4:36 P	649	66.7	100	..	..	73.7	86	SSW	7
4:45 P	377	69.6	92	SSW	9	73.9	86	SSW	9
4:45 P	195	73.9	86	SSW	9	..	..	..	..
4:45 P	15	77.4	76	..	..	..	..	..	..
Aug. 21.									
5:57 P	15	69.8	69	..	..	..	..	..	..
5:57 P	195	66.2	79	SSW	6	..	..	..	..
5:57 P	467	62.7	94	SW	6	66.2	79	SSW	6
6:13 P	509	62.2	93	SW	8	64.1	83	S	5
6:30 P	467	63.2	85	SW	8	63.1	85	S	6
6:41 P	632	61.6	87	SW	6	62.5	87	S	7
6:48 P	711	61.1	88	WSW	6	62.0	87	S	7

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.				Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.		Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1900. Aug. 21.		°F	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.	1900. Sept. 18.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
7:00 P	821	59.8	88	WSW	7	61.7	89	S	7	2:13 P	2487	35.1	72	. .	13	64.4	49	NW	11
7:04 P	877	59.1	89	WSW	7	61.6	89	S	7	2:25 P	3010	28.6	78	N	15	65.1	48	NW	10
7:19 P	1208	52.3	96	. .	8	61.1	90	S	7	2:37 P	2966	30.1	78	N	14	63.4	48	NW	13
7:45 P	1309	50.9	100	. .	9	60.5	92	S	8	3:00 P	2284	40.2	63	. .	11	63.0	48	NW	11
8:05 P	1117	54.6	93	. .	7	60.2	93	SSW	8	3:05 P	2105	34.2	100	. .	12	63.4	47	NW	10
8:15 P	1688	45.4	98	. .	9	60.1	94	SSW	8	3:11 P	2745	34.7	52	N	12	63.8	47	NW	11
8:33 P	2030	41.2	93	. .	10	60.2	94	SSW	7	3:17 P	2818	34.2	43	. .	13	63.3	47	NW	10
8:37 P	2115	40.1	99	. .	10	60.2	93	SSW	8	3:23 P	2965	32.5	50	. .	16	62.8	47	NW	12
8:42 P	2282	42.2	43	WNW	11	60.2	92	SSW	8	3:33 P	2292	37.7	43	N	12	63.8	46	NW	13
8:45 P	2277	42.3	43	. .	11	60.1	92	SSW	8	3:42 P	1995	38.2	. .	N	11	64.0	46	NW	10
8:49 P	2200	39.9	98	WNW	10	60.0	92	SSW	7	3:54 P	2042	33.2	92	N	11	63.6	45	WNW	11
8:58 P	2022	43.1	98	. .	8	59.9	93	SSW	7	4:14 P	1793	35.2	100	N	10	61.8	45	WNW	10
9:08 P	1217	52.4	100	W	8	60.0	93	SSW	7	4:20 P	1515	41.2	79	NNW	9	61.3	47	WNW	11
9:11 P	1478	49.3	100	. .	8	60.0	93	SSW	7	4:25 P	1636	39.3	82	NNW	9	61.9	46	WNW	11
9:23 P	979	57.3	88	. .	8	59.8	94	SSW	7	4:34 P	1445	43.1	73	NNW	11	61.9	46	NW	12
9:31 P	777	59.6	83	W	12	59.4	95	SW	7	4:47 P	1082	47.0	61	NNW	11	61.8	46	NW	13
9:42 P	622	60.4	82	WSW	12	59.3	96	SW	7	4:57 P	1153	45.4	65	NNW	12	61.0	46	NW	13
9:51 P	410	62.6	82	WSW	15	59.2	97	SW	7	5:01 P	1033	47.1	59	NNW	11	60.9	46	NW	13
9:59 P	242	60.2	92	SW	. .	59.1	98	SW	7	5:12 P	889	49.0	58	NNW	13	60.2	46	NW	12
9:59 P	195	59.1	98	SW	7	. .	. .	. .	. .	5:25 P	638	52.5	55	NNW	13	59.0	49	NW	11
9:59 P	15	60.8	97	. .	. .	. .	. .	. .	. .	5:34 P	408	56.1	51	NNW	13	58.4	51	NW	13
Sept. 18.										5:34 P	195	58.4	51	NW	13	. .	. .	. .	. .
11:08 A	15	59.8	66	. .	. .	. .	. .	. .	. .	5:34 P	15	60.3	47	. .	. .	. .	. .	. .	. .
11:08 A	195	57.5	67	WNW	12	. .	. .	. .	. .	Sept. 19.									
11:08 A	531	51.4	79	NNW	17	57.5	67	WNW	12	9:03 P	15	41.1	96	. .	. .	. .	. .	. .	. .
11:19 A	916	46.7	80	NNW	21	58.5	65	W	13	9:03 P	195	45.1	77	SSE	6	. .	. .	. .	. .
11:34 A	1128	44.0	80	NNW	24	59.2	65	W	11	9:03 P	220	48.6	47	SSE	7	45.1	77	SSE	6
11:41 A	1393	43.0	62	N	23	59.9	62	W	12	9:20 P	230	49.0	32	S	6	45.4	74	S	6
11:53 A	1741	38.5	67	N	20	62.0	59	W	10	9:45 P	235	52.0	27	S	6	45.5	75	S	5
11:57 A	1875	38.8	80	N	18	62.1	58	W	12	9:58 P	290	51.6	29	. .	6	45.4	76	SSE	6
0:07 P	1919	38.4	100	N	18	62.7	55	W	13	10:15 P	492	48.4	57	S	7	45.3	78	SSE	7
0:12 P	2012	37.7	100	N	18	63.1	54	W	13	10:27 P	577	47.7	60	SSW	6	45.6	80	SSE	7
0:19 P	2048	38.5	100	N	15	63.1	54	W	13	10:44 P	600	47.6	55	. .	6	45.0	82	SSE	7
0:27 P	2280	38.2	100	. .	15	62.9	54	W	13	10:50 P	792	46.2	56	SSW	5	44.9	83	SSE	7
0:32 P	2394	35.7	80	. .	16	62.9	54	W	13	11:14 P	600	47.6	54	. .	6	46.1	82	S	7
0:42 P	2546	33.2	86	. .	15	61.9	54	W	14	11.53 P	600	47.6	54	. .	5	45.8	80	S	8
0:51 P	2273	34.4	95	N	16	61.9	54	W	14	Sept. 20.									
0:52 P	2457	33.2	100	N	16	61.9	54	W	14	1:10 A	600	47.4	55	. .	5	46.8	90	S	8
0:57 P	2416	31.6	100	. .	16	62.0	54	WNW	13	1:10 A	15	37.1	100	. .	. .	46.8	90	S	8
1:06 P	2503	32.7	100	N	16	62.8	52	WNW	10	1:50 A	600	47.6	55	SSW	5	46.8	80	SSW	7
1:09 P	2618	31.2	95	N	15	63.1	51	WNW	10	2:13 A	600	47.5	55	. .	5	47.4	78	SSW	7
1:12 P	2641	30.5	98	. .	14	63.2	50	WNW	11	3:00 A	600	47.5	62	. .	5	47.1	84	SW	7
1:27 P	2168	36.2	100	N	12	62.4	48	NW	14	3:38 A	600	47.9	57	. .	5	48.0	81	SSW	7
1:29 P	2264	35.6	100	N	12	62.5	46	NW	13	4:23 A	15	34.1	100	. .	. .	48.0	81	SSW	7
1:37 P	2065	38.8	88	N	12	62.4	43	NW	10	4:23 A	600	47.7	54	. .	5	48.0	78	SSW	7
1:49 P	2624	31.2	95	N	13	63.3	48	NW	7	5:53 A	797	45.7	52	SSW	5	47.8	84	SSW	8
1:57 P	2763	29.2	100	. .	14	62.9	50	NW	9	5:58 A	733	46.6	53	SSW	5	47.8	84	S	8

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1900. Sept. 20.		°F.	p. ct.		m.p.s.	°F	p. ct.		m.p.s.
6:00 A	1106	44.9	45	ssw	6	48.8	84	s	7
6:06 A	1504	49.6	10	ssw	6	48.9	82	ssw	7
6:10 A	1483	49.1	10	ssw	6	49.2	82	ssw	7
6:11 A	1445	49.0	10	ssw	6	49.4	82	ssw	7
6:19 A	1166	44.7	13	ssw	7	49.4	82	ssw	8
6:26 A	882	44.7	14	ssw	7	49.4	81	ssw	8
6:32 A	756	45.9	54	sw	6	49.8	80	ssw	8
6:35 A	747	46.2	69	sw	6	50.3	77	ssw	7
6:51 A	520	49.6	77	sw	10	51.1	77	ssw	7
6:55 A	342	53.3	72	..	..	51.4	76	ssw	7
6:55 A	195	51.4	72	ssw	7	..	..	..	..
6:55 A	15	42.4	98	..	..	..	..	..	..
7:53 A	15	52.2	94	..	..	..	..	..	..
7:53 A	195	55.2	79	ssw	5	..	..	..	..
7:53 A	524	47.9	77	ssw	11	55.2	79	ssw	5
8:00 A	680	45.8	81	sw	9	56.7	67	s	6
8:12 A	825	43.8	77	sw	8	57.0	62	s	6
8:18 A	991	42.8	77	sw	8	57.2	62	s	7
8:21 A	1046	42.1	77	..	8	57.2	60	ssw	7
8:26 A	1075	43.7	28	ssw	8	57.3	60	ssw	8
8:32 A	1104	43.9	28	ssw	8	56.3	61	ssw	9
8:50 A	1378	47.5	17	ssw	9	57.3	58	ssw	9
9:07 A	1471	50.3	12	sw	9	57.1	57	s	9
10:05 A	1421	49.5	6	sw	10	59.5	55	ssw	7
10:32 A	1739	48.2	4	sw	9	59.3	53	ssw	8
10:39 A	1582	46.8	4	sw	9	59.0	54	ssw	8
10:47 A	1857	49.0	1	sw	9	59.8	55	ssw	7
11:01 A	2438	43.0	6	sw	9	59.6	55	ssw	7
11:07 A	2237	45.2	8	sw	10	59.5	56	ssw	7
11:28 A	2354	44.3	13	sw	9	60.0	56	s	9
11:44 A	2735	41.1	15	sw	10	61.5	54	s	8
0:13 P	2559	42.6	22	wsw	10	61.4	57	ssw	8
0:35 P	2995	37.5	29	..	12	61.5	59	ssw	7
0:45 P	3067	35.9	34	..	11	61.5	60	ssw	8
1:05 P	3167	35.7	83	wsw	12	60.9	63	s	7
1:30 P	3426	31.9	98	wsw	15	60.0	65	ssw	8
1:52 P	3445	31.2	100	wsw	14	60.3	66	ssw	8
2:00 P	3424	31.9	100	wsw	14	60.1	68	ssw	9
2:29 P	3434	31.0	100	wsw	14	58.3	74	ssw	9
2:45 P	3529	30.8	95	wsw	15	57.7	78	ssw	10
2:51 P	3531	30.4	92	..	15	57.3	78	ssw	10
3:06 P	3761	29.1	93	..	15	57.0	81	ssw	10
3:15 P	3521	30.8	97	..	18	56.9	82	ssw	10
3:43 P	3101	34.1	92	wsw	11	56.5	82	ssw	12
3:48 P	3059	34.8	91	wsw	11	56.7	82	ssw	11
3:53 P	2712	40.1	88	wsw	8	56.7	82	ssw	11
3:56 P	2396	42.1	88	wsw	7	56.7	82	ssw	11
1900. Sept. 20.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
3:58 P	2039	44.6	42	sw	7	56.6	82	ssw	12
4:03 P	2244	44.1	79	sw	7	56.6	83	s	12
4:14 P	1820	50.2	29	sw	8	56.5	84	s	11
4:22 P	1938	49.7	29	sw	8	56.5	83	s	10
4:32 P	1567	54.2	25	sw	10	56.6	83	s	10
4:38 P	1532	55.6	24	sw	10	56.5	83	s	9
4:46 P	1372	57.9	21	..	11	56.2	84	s	11
4:54 P	1181	54.9	26	sw	14	56.1	87	s	10
5:01 P	821	48.1	80	sw	16	56.1	87	s	9
5:08 P	914	49.1	80	sw	16	56.0	86	s	10
5:21 P	556	51.1	90	ssw	16	55.9	87	s	10
5:30 P	368	52.8	82	s	13	55.9	89	s	9
5:30 P	195	55.9	89	s	9	..	..	..	..
5:30* P	15	58.5	86	..	..	..	..	..	..
10:32 A	15	62.6	51	..	..	..	..	..	..
10:32 A	195	59.3	53	ssw	8	..	..	..	..
10:32 A	532	51.9	71	ssw	..	59.3	53	ssw	8
10:38 A	444	55.7	65	ssw	..	59.0	54	ssw	8
10:46 A	733	50.2	77	ssw	..	59.8	55	ssw	7
10:50 A	965	46.0	77	sw	..	60.0	55	ssw	7
10:59 A	1090	51.3	16	sw	..	59.6	55	ssw	7
11:07 A	974	46.0	77	sw	..	59.5	56	ssw	7
11:28 A	1102	51.3	12	sw	..	60.0	56	s	9
11:35 A	1222	52.6	10	sw	..	60.5	56	s	8
11:44 A	1398	52.9	5	sw	..	61.5	54	s	8
0:14 P	1287	53.2	8	sw		61.4	57	ssw	8
0:30 P	1478	54.8	4	..	..	61.2	59	ssw	8
0:35 P	1518	54.5	4	..	..	61.5	59	ssw	7
0:45 P	1680	53.2	5	..	..	61.5	60	ssw	8
1:06 P	1714	52.5	6	wsw	..	60.9	63	ssw	7
1:30 P	2078	49.2	10	wsw	..	60.0	65	ssw	8
1:55 P	1938	50.3	14	wsw	..	60.3	66	ssw	8
2:00 P	1938	50.3	14	wsw	..	60.1	68	ssw	9
2:30 P	2029	50.2	18	wsw	..	58.3	74	ssw	9
2:45 P	2115	47.6	23	wsw	..	57.7	78	ssw	10
2:51 P	2188	46.6	25	wsw	..	57.3	78	ssw	10
3:06 P	2230	43.6	55	wsw	..	57.0	81	ssw	10
3:12 P	2026	46.6	41	wsw	..	56.9	82	ssw	10
3:30 P	1679	52.8	23	wsw	..	56.7	83	ssw	11
3:43 P	1552	54.4	19	wsw	..	56.5	82	ssw	12
3:48 P	1513	55.2	21	..	..	56.7	82	ssw	11
3:51 P	1231	56.5	18	wsw	..	56.7	82	ssw	11
3:56 P	1067	54.8	23	sw	..	56.7	82	ssw	11
4:00 P	1032	54.4	12	sw	..	56.6	83	ssw	12
4:08 P	779	49.6	82	sw	..	56.6	83	s	11
4:14 P	636	50.5	82	sw	..	56.5	84	s	11
4:22 P	602	50.5	89	sw	..	56.5	84	s	10

* Second meteorograph attached.

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1900. Sept. 20.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
4:27 P	472	53.0	89	SSW	..	56.6	84	S	10
4:27 P	195	56.6	84	S	10	..	..	..	..
4:27 P	15	59.2	81	..	..	..	..	..	..
Sept. 21.									
9:40 A	15	67.0	95	..	..	..	..	..	..
9:40 A	195	63.9	100	SW	9	..	..	..	..
9:40 A	453	60.7	..	..	..	63.9	100	SW	9
9:47 A	454	60.7	..	WSW	..	64.2	99	SW	8
9:58 A	647	58.5	100	W	..	64.3	98	SW	8
10:11 A	793	57.6	100	W	13	65.5	94	SW	8
10:21 A	1074	56.9	86	W	10	66.9	88	SW	7
10:39 A	1277	55.0	83	W	10	67.5	87	SW	8
10:44 A	1465	55.6	82	W	12	67.7	87	SW	8
11:03 A	1514	52.8	88	WSW	12	67.3	86	SW	9
11:14 A	1854	49.0	..	..	15	67.7	85	SW	8
11:15 A	1876	50.8	100	..	17	67.7	85	SW	8
11:20 A	1949	48.7	85	..	17	68.4	83	SW	6
11:24 A	1890	49.7	88	..	17	68.4	83	SW	6
11:36 A	2134	48.1	84	..	14	68.2	83	SW	7
11:41 A	2160	47.8	80	..	14	68.4	82	SW	8
11:53 A	2224	49.8	43	WSW	16	69.9	79	WSW	7
0:13 P	2588	44.4	36	WSW	15	71.1	75	SW	8
0:15 P	2641	44.9	36	WSW	15	71.1	74	SW	6
0:28 P	2447	45.2	33	WSW	15	71.9	72	SW	7
0:42 P	2477	44.0	33	WSW	15	72.3	72	SW	7
1:01 P	2428	45.2	33	WSW	15	72.8	70	SW	8
1:36 P	2386	45.2	33	WSW	15	71.8	76	SW	7
1:46 P	2534	42.7	33	WSW	15	71.2	77	SSW	6
1:49 P	2544	42.0	35	WSW	15	71.1	77	SSW	6
1:53 P	2564	41.2	36	WSW	15	71.2	77	SSW	6
1:56 P	2580	41.1	37	WSW	15	71.2	76	SSW	6
2:02 P	2625	40.7	38	WSW	14	71.2	76	SSW	8
2:14 P	2630	41.1	42	WSW	14	71.2	81	SSW	7
2:24 P	3152	31.7	53	WSW	14	70.6	83	SSW	6
2:26 P	3226	31.7	53	WSW	14	70.7	82	SSW	6
2:29 P	3350	33.3	..	WSW	18	70.9	82	SSW	7
2:35 P	3399	32.7	32	WSW	16	71.0	82	SSW	7
2:44 P	3399	30.3	34	WSW	17	70.9	83	SSW	7
2:53 P	3594	29.0	33	WSW	17	70.6	84	SSW	7
3:00 P	3630	29.0	33	WSW	20	69.9	85	SSW	7
3:19 P	3722	28.0	28	WSW	19	69.8	86	SSW	7
3:43 P	3858	..	21	WSW	18	69.7	86	SSW	7
3:50 P	3809	..	19	WSW	18	69.7	86	SSW	7
4:12 P	3540	27.5	18	WSW	19	69.2	86	SSW	7
4:26 P	3303	31.5	28	WSW	19	69.1	86	SSW	7
4:28 P	3126	32.5	40	..	..	69.1	85	SSW	7
4:40 P	1920	52.3	42	..	15	69.0	84	SSW	7

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1900. Sept. 21.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
5:00 P	1931	52.7	38	..	15	68.6	82	SSW	8
5:30 P	1920	52.7	38	..	15	66.8	90	SSW	8
6:00 P	1910	52.1	38	..	16	65.6	98	SSW	8
6:30 P	1680	51.0	38	..	16	64.6	100	SSW	8
7:00 P	1820	48.7	45	..	17	63.9	100	SSW	8
7:30 P	1812	47.8	50	..	17	63.8	100	SSW	8
8:00 P	1817	47.2	63	..	17	63.7	100	SSW	8
9:00 P	1683	48.7	59	..	17	63.3	100	SSW	7
9:15 P	1664	47.7	75	..	17	63.2	100	SSW	7
9:30 P	1847	44.6	80	..	17	62.7	100	SSW	7
9:36 P	1875	42.3	95	..	13	62.3	100	NNW	8
9:45 P	1657	46.8	100	..	13	61.8	88	NNW	10
9:50 P	1310	52.8	..	..	..	61.6	87	NNW	8
10:05 P	472	63.4	..	..	..	60.4	89	NNW	5
10:10 P	225	64.5	..	..	..	59.8	90	NNW	5
10:10 P	195	59.8	90	NNW	5	..	..	..	..
10:10 P	15	61.2	89	..	..	..	..	..	..
11:04* A	15	71.6	79	..	..	..	..	..	..
11:04 A	195	67.3	86	SW	9	..	..	..	..
11:04 A	406	63.7	95	SW	..	67.3	86	SW	9
11:09 A	502	62.3	100	WSW	..	67.3	86	SW	9
11:12 A	635	61.0	100	WSW	..	67.7	85	SW	9
11:20 A	643	60.0	100	WSW	..	68.4	83	SW	6
11:24 A	632	60.4	100	WSW	..	68.4	83	SW	6
11:36 A	886	57.8	92	WSW	..	68.2	83	SW	7
11:41 A	919	57.2	87	WSW	..	68.4	82	SW	8
11:54 A	1027	58.8	..	..	..	69.9	79	WSW	7
0:15 P	1178	57.2	70	WSW	..	71.1	74	SW	6
0:28 P	1059	57.4	70	WSW	..	71.9	72	SW	7
0:42 P	1117	56.2	80	WSW	..	72.3	72	SSW	7
1:01 P	1020	57.1	95	WSW	..	72.8	70	SW	8
1:36 P	1048	56.8	88	WSW	..	71.8	76	SW	7
1:43 P	1203	55.2	81	WSW	..	71.3	77	SSW	7
1:46 P	1166	55.2	73	WSW	..	71.2	77	SSW	6
1:51 P	1152	56.8	68	WSW	..	71.1	77	SSW	6
1:54 P	1248	53.6	95	WSW	..	71.2	77	SSW	6
1:57 P	1312	52.5	84	WSW	..	71.2	76	SSW	6
2:02 P	1318	52.5	84	WSW	..	71.2	76	SSW	8
2:14 P	1432	56.7	15	WSW	..	71.2	81	SSW	7
2:24 P	1846	52.5	15	WSW	..	70.6	83	SSW	6
2:26 P	1903	51.1	15	WSW	..	70.7	83	SSW	6
2:35 P	2032	48.3	14	WSW	..	71.0	82	SSW	7
2:44 P	2095	49.0	14	WSW	..	70.9	83	SSW	7
2:53 P	2239	45.1	18	WSW	..	70.6	84	SSW	7
3:00 P	2148	45.9	19	WSW	..	69.9	85	SSW	7
3:14 P	2344	43.6	21	WSW	..	69.8	86	SSW	7
3:19 P	2392	42.3	22	WSW	..	69.8	86	SSW	7

* Second meteorograph attached.

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1900. Sept. 21.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
3:26 P	2401	42.0	23	WSW	..	69.7	86	SSW	7
3:31 P	2430	40.7	24	WSW	..	69.7	86	SSW	7
3:43 P	2470	39.5	30	WSW	..	69.7	86	SSW	7
3:55 P	2419	40.7	28	WSW	..	69.7	86	SSW	7
4:00 P	2368	42.4	25	WSW	..	69.4	86	SSW	7
4:12 P	2149	45.1	23	WSW	..	69.2	86	SSW	7
4:26 P	1952	50.8	16	WSW	..	69.1	86	SSW	7
4:28 P	1860	52.6	16	WSW	..	69.1	85	SSW	7
4:40 P	620	61.4	87	..	..	69.0	84	SSW	7
4:40 P	15	71.3	84	..	..	69.0	84	SSW	7
5:00 P	624	61.4	84	..	..	68.6	82	SSW	8
5:30 P	646	61.3	75	..	..	66.8	90	SSW	8
6:00 P	650	61.1	78	..	..	65.6	92	SSW	8
6:30 P	650	61.0	79	..	..	64.6	100	SSW	8
6:35 P	758	59.5	65	..	..	64.5	100	SSW	7
7:00 P	768	62.7	26	..	..	63.9	100	SSW	8
7:30 P	784	62.1	30	..	..	63.8	100	SSW	8
8:00 P	764	59.4	80	..	..	63.7	100	SSW	8
8:30 P	720	61.0	78	..	..	63.7	100	SSW	8
8:35 P	544	61.1	78	..	..	63.7	100	SSW	8
9:00 P	516	61.3	77	..	..	63.3	100	SSW	7
9:15 P	255	62.1	68	..	..	62.7	100	SSW	7
9:20 P	100	61.1	68	..	..	62.7	100	SSW	7
9:30 P	54	61.1	67	..	..	62.7	100	SSW	7
9:36 P	30	56.4	100	..	..	62.3	100	NNW	8
9:36 P	15	64.4	100	..	..	..	..	..	..
Dec. 24.									
1:48 P	15	54.5	79	..	..	..	..	..	..
1:48 P	195	52.5	87	WSW	7	..	..	..	..
1:48 P	425	48.1	98	SSW	6	52.1	87	WSW	7
1:51 P	466	47.0	100	SSW	..	52.2	87	WSW	7
1:56 P	548	46.7	100	SW	7	52.3	87	WSW	6
2:07 P	554	46.2	100	SW	7	52.3	87	WSW	6
2:09 P	724	47.5	90	SW	7	52.4	87	WSW	6
2:14 P	1006	48.6	71	WSW	14	52.4	87	WSW	6
2:17 P	992	48.3	70	WSW	14	52.5	87	WSW	5
2:20 P	1201	47.2	..	WSW	17	52.8	86	WSW	5
2:27 P	1427	43.0	..	WSW	18	52.3	84	WSW	6
2:30 P	1627	41.0	..	..	20	53.6	83	SW	6
2:30 P	195	53.6	83	SW	6	..	..	..	..
2:30 P	15	56.6	74	..	..	..	..	..	..
Dec. 27.									
1:59 P	15	32.4	23	..	..	..	..	..	..
1:59 P	195	28.5	27	WNW	8	..	..	..	..
1:59 P	329	25.8	26	NW	8	28.5	27	WNW	8
2:10 P	511	23.4	27	NW	9	28.8	27	WNW	8
2:28 P	474	24.2	27	NW	9	28.9	25	WNW	9

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1900. Dec. 27.		°F	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
2:37 P	432	25.7	..	NW	8	29.0	25	WNW	8
2:55 P	267	27.9	..	WNW	7	29.4	25	WNW	6
2:55 P	15	32.4	23	..	..	29.4	25	WNW	6
4.03 P	15	30.3	26	..	..	28.3	27	W	5
4:03 P	294	27.7	25	WNW	6	28.3	27	W	5
4:10 P	420	25.0	28	WNW	6	28.1	27	W	6
4:13 P	367	25.9	25	WNW	6	28.0	27	W	6
4:28 P	591	21.9	30	WNW	6	27.7	28	W	5
4:37 P	620	21.7	29	W	6	27.5	29	W	6
4:46 P	461	24.0	30	W	6	27.3	29	W	6
5:01 P	662	20.4	33	W	6	27.1	31	W	6
5:17 P	767	18.3	36	..	6	26.9	32	W	7
5:46 P	810	17.9	38	..	5	26.8	35	W	7
6:12 P	914	15.7	41	..	5	26.2	37	WSW	5
6:31 P	750	19.1	40	..	5	26.4	38	WSW	7
6:37 P	824	17.7	45	..	5	24.3	38	W	7
7:00 P	724	19.5	45	..	5	26.1	40	W	7
7:06 P	803	18.2	46	WNW	5	25.4	41	W	6
7:30 P	713	19.2	49	..	5	25.2	43	W	6
7:50 P	708	19.2	53	..	5	24.9	46	W	6
7:58 P	857	16.9	45	..	4	24.8	47	W	6
8:04 P	914	16.4	48	..	4	24.7	49	W	6
8:13 P	889	16.7	56	..	4	24.6	50	W	5
8:28 P	982	15 8	63	WNW	5	24.4	51	WSW	6
8:30 P	1022	23.7	48	..	8	24.4	51	WSW	7
8:33 P	1172	24.8	37	..	9	24.3	52	WSW	7
8:35 P	1027	23.7	45	..	8	24.3	52	WSW	7
8:38 P	982	16.8	..	..	8	24.2	53	WSW	7
8:40 P	857	16.5	65	..	8	24.1	53	WSW	6
8:45 P	817	16.9	65	..	8	24.0	54	WSW	6
9:00 P	487	22.7	64	WNW	7	23.9	55	WSW	6
9:02 P	344	25.2	62	..	6	24.0	55	WSW	6
9:06 P	237	24.4	61	W	6	24.1	56	W	6
9:06 P	195	24.1	56	W	6	..	..	..	..
9:06 P	15	16.9	87	..	..	..	..	..	..
Dec. 28.									
11:46 A	15	31.8	95	..	..	..	..	..	..
11:46 A	195	30.4	100	S	9	..	..	..	..
11:46 A	319	32.1	100	SSW	..	30.4	100	S	9
11:55 A	570	30.5	99	SW	17	30.4	100	S	8
0:09 P	939	27.9	99	SW	20	30.4	100	S	8
0:21 P	1198	25.6	99	SW	22	30.4	100	S	8
0:48 P	580	31.5	100	SW	18	30.6	100	S	9
0:55 P	367	32.1	100	WSW	17	30.7	100	S	9
0:56 P	282	31.4	100	SSW	..	30.7	100	S	9
0:56 P	195	30.7	100	S	9	..	..	..	..
0:56 P	15	32.4	95	..	..	..	..	..	..

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1900. Dec. 29.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
11:37 A	15	31.6	50	..	..	..	..	..	..
11:37 A	195	27.0	56	W	8	..	..	..	..
11:37 A	514	22.0	60	WNW	8	27.0	56	W	8
11:56 A	846	18.9	62	WNW	12	27.4	56	W	7
0:03 P	676	18.6	69	WNW	10	27.5	55	W	9
0:07 P	446	21.7	69	..	9	27.5	55	W	9
0:07 P	15	32.4	49	..	..	27.5	55	W	9
0:35 P	573	22.5	60	W	9	28.2	54	W	8
0:47 P	587	21.5	62	W	8	28.5	53	WSW	8
0:53 P	874	18.2	62	WNW	12	28.7	53	WSW	6
0:55 P	941	16.6	62	..	12	28.8	53	WSW	6
0:59 P	1210	26.6	32	W	21	29.0	53	WSW	7
1:08 P	1372	26.1	22	W	18	29.0	52	WSW	10
1:16 P	1335	27.5	12	WSW	17	29.2	52	WSW	9
1:30 P	1297	28.4	8	WSW	17	29.8	52	W	8
1:50 P	1676	23.6	4	W	16	30.0	51	W	9
2:02 P	2057	19.5	4	W	14	30.0	49	W	11
2:12 P	2220	18.7	7	..	17	30.0	48	W	9
2:17 P	1860	23.1	4	W	16	30.1	48	W	9
2:39 P	1909	24.0	3	W	18	30.3	48	W	8
2.43 P	2556	18.8	12	W	18	30.3	47	W	8
2:46 P	2703	17.7	22	W	18	30.6	47	W	8
2.50 P	2483	19.6	22	W	18	30.5	47	W	9
2:52 P	2522	18.9	25	W	18	30.4	47	W	10
3:00 P	2294	20.6	22	W	18	30.4	47	W	10
3:02 P	2195	21.6	17	W	13	30.4	47	W	10
3:08 P	1818	25.0	12	W	14	30.4	47	W	9
3:11 P	1786	24.6	12	W	15	30.4	47	W	9
3:15 P	1726	25.8	9	W	15	30.4	47	W	9
3:25 P	1625	25.7	5	W	15	30.4	47	W	9
3:35 P	1305	28.6	3	W	17	30.4	47	W	10
3:45 P	1259	29.1	2	..	16	30.3	47	W	10
3:50 P	1223	29.5	2	W	19	30.3	47	W	9
3:58 P	1025	26.6	4	W	19	30.2	47	W	8
4:01 P	944	24.1	5	..	18	30.1	48	WSW	9
4:04 P	1011	24.8	4	W	15	30.0	48	WSW	9
4:07 P	809	20.6	32	..	10	30.0	48	WSW	9
4:16 P	609	22.6	37	W	10	29.8	49	WSW	8
4:24 P	346	26.7	47	W	11	29.3	49	WSW	8
4:24 P	195	29.3	49	WSW	8	..	..	..	..
4:24 P	15	30.8	44	..	..	..	..	..	..
1901. Jan. 28.									
2:10 P	15	28.3	48	..	..	..	..	..	..
2:10 P	195	25.0	51	WNW	12	..	..	..	..
2:10 P	506	18.4	62	WNW	11	25.0	51	WNW	12
2:21 P	850	12.6	74	WNW	13	24.8	52	WNW	12

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1901. Jan. 28.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
2:32 P	1177	7.5	89	NW	13	24.6	52	WNW	12
2:35 P	1071	8.7	92	NW	10	24.7	51	WNW	13
2:44 P	1227	6.0	98	WNW	10	24.6	52	WNW	14
2:58 P	1562	1.6	100	..	13	24.6	51	WNW	11
3:00 P	1500	2.0	100	..	11	24.6	51	WNW	11
3:16 P	1277	5.5	100	NW	10	24.7	52	NW	12
3:25 P	1633	6.4	100	..	10	24.7	51	NW	12
3:30 P	1675	6.6	100	..	..	24.6	51	NW	12
3:41 P	1475	2.6	100	NW	9	24.8	51	NW	12
3:58 P	1632	5.5	100	..	10	24.9	51	NW	10
4:05 P	1796	5.6	100	..	12	25.0	51	NW	13
4:08 P	1890	5.1	100	..	12	25.0	52	NW	13
4:13 P	1778	4.6	100	..	12	25.0	52	NW	11
4:17 P	1685	0.8	100	..	10	25.0	52	NW	12
4.35 P	1392	3.9	96	..	9	24.8	52	NW	10
5:00 P	1617	2.2	96	..	11	24.2	54	NW	11
5:30 P	1636	2.3	96	..	10	24.0	56	NW	10
6:00 P	1620	1.6	95	..	12	23.6	55	NW	11
6:30 P	1610	1.6	95	..	12	23.6	56	NW	13
6:45 P	1190	6.6	95	..	13	22.8	57	NW	14
7:00 P	1225	5.7	95	..	14	22.5	57	WNW	10
7:15 P	1307	5.5	92	..	14	22.1	58	WNW	12
7:35 P	1025	8.7	100	..	11	22.0	58	WNW	12
8:00 P	1012	8.6	100	..	10	21.1	60	WNW	13
8:30 P	1220	4.8	94	..	16	19.3	75	WNW	12
8:50 P	1075	6.6	98	..	11	19.0	78	NW	11
9:30 P	1040	6.0	95	..	12	18.8	78	WNW	10
9:55 P	1140	4.9	85	..	15	18.2	83	WNW	10
10:05 P	1140	2.8	90	..	16	18.1	83	WNW	9
10:30 P	1080	3.2	85	..	19	17.9	83	WNW	14
10:35 P	1005	4.8	82	..	20	17.8	86	WNW	11
11:00 P	1120	1.9	85	..	19	17.2	89	WNW	9
11:30 P	1150	1.9	91	..	19	17.7	78	WNW	10
11:37 P	1315	3.6	78	..	18	17.8	78	WNW	11
11:45 P	1265	0.9	75	..	16	17.7	79	WNW	10
12:00 P	1265	−0.1	75	..	19	17.7	78	WNW	10
Jan. 29.									
0:30 A	1170	2.6	75	..	20	17.8	72	WNW	10
1:00 A	1170	1.6	75	..	20	17.6	72	WNW	12
1:15 A	1100	2.6	80	..	15	17.4	72	WNW	12
1:30 A	920	7.2	80	..	21	17.3	72	WNW	11
2:05 A	1315	−0.4	85	..	..	17.0	76	WNW	10
2:30 A	1100	1.6	..	..	20	16.5	79	WNW	9
3:30 A	1170	1.6	..	..	16	15.9	74	WNW	10
4:00 A	1020	3.6	..	..	16	15.9	72	NW	9
4:30 A	1010	3.9	..	..	16	15.6	69	WNW	10
5:00 A	985	4.3	..	..	16	15.3	68	WNW	9

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1901. Jan. 29.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
5:06 A	950	4.7	..	..	16	15.3	68	WNW	9
5:20 A	1110	5.8	..	..	..	15.3	68	WNW	9
5:25 A	1207	8.4	..	..	..	15.4	68	WNW	9
5:25 A	195	15.4	68	WNW	9	..	..	..	..
5:25 A	15	18.0	64	..	..	..	..	..	..
Mar. 7.									
10:07 A	15	19.7	..	..	..	..	..	..	..
10:07 A	195	16.3	46	WSW	8	..	..	..	..
10:07 A	415	12.3	51	SW	9	16.3	46	WSW	8
10:15 A	565	9.8	52	SW	7	16.6	46	WSW	8
10:18 A	417	11.8	51	SW	7	16.9	46	WSW	7
10:24 A	524	11.5	56	SW	..	17.4	45	WSW	7
10:33 A	852	6.4	58	SW	9	17.6	44	WSW	8
10:37 A	887	5.5	60	SW	10	17.6	44	WSW	8
10:54 A	1120	3.1	62	SW	..	18.6	43	WSW	8
10:58 A	1263	0.5	64	WSW	11	18.4	43	WSW	8
11:00 A	1322	−0.5	70	WSW	12	18.8	43	WSW	8
11:06 A	1402	+0.5	70	W	..	19.0	43	WSW	8
11:13 A	1666	−1.8	69	W	16	19.1	43	WSW	8
11:27 A	1694	−2.7	72	W	15	19.8	43	WSW	7
11:36 A	1774	−1.8	72	..	..	19.8	43	WSW	8
11:44 A	1965	−5.4	73	W	14	20.2	42	WSW	9
12:00 A	2084	−7.3	77	W	15	21.5	42	SW	7
0:07 P	2008	−6.5	80	W	15	22.0	42	SW	8
0:22 P	2244	−10.0	82	W	14	22.2	42	SW	8
0:31 P	2292	−10.7	88	W	14	22.8	42	WSW	8
0:35 P	2352	−8.0	88	..	..	23.0	42	WSW	8
0:42 P	2721	−3.3	75	W	13	23.0	42	WSW	8
0:48 P	2580	−2.0	75	W	13	23.1	41	WSW	8
0:54 P	2416	−1.8	73	..	..	23.1	41	WSW	6
1:08 P	2942	−3.2	68	W	15	23.8	41	WSW	8
1:18 P	3430	−4.8	64	W	16	24.0	41	WSW	10
1:25 P	3658	−7.6	64	W	15	24.3	40	WSW	9
1:26 P	3542	−7.0	62	W	15	24.5	41	WSW	9
1:46 P	3825	−7.1	57	W	12	25.2	41	SW	8
2:04 P	3639	−5.0	52	W	11	25.3	40	SW	8
2:10 P	3752	−6.7	52	W	12	25.7	40	SW	7
2:32 P	3769	−6.7	50	W	13	26.2	40	SW	7
2:45 P	3196	−2.7	50	WNW	18	27.7	39	WSW	7
2:47 P	3338	−4.7	49	WNW	13	27.1	39	WSW	7
2:55 P	3138	−4.5	49	WNW	13	27.2	39	WSW	7
3:06 P	3461	−6.3	48	WNW	16	26.9	39	SW	9
3:16 P	3073	−5.0	47	WNW	16	27.4	38	SW	8
3:20 P	2903	−7.3	48	WNW	18	28.1	38	SW	7
3:25 P	2832	−5.6	47	WNW	18	28.2	38	SW	7
3:28 P	2907	−6.7	46	WNW	18	28.2	38	SW	7
3:28 P	195	28.2	38	SW	7	..	..	..	..

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1901. Mar. 7.		°F.	p.ct.		m.p.s.	°F	p.ct.		m.p.s.
3:28 P	15	30.8	..	..	..	..	..	..	..
Mar. 22.									
2.05 P	15	43.6	..	..	..	..	..	..	..
2:05 P	195	42.2	40	W	11	..	..	..	..
2:05 P	598	33.9	50	WSW	11	42.2	40	W	11
2:16 P	1074	25.5	57	WSW	10	40.9	41	W	9
2:23 P	856	28.4	58	WSW	11	40.5	43	W	11
2:56 P	900	28.2	63	SW	11	40.5	43	W	10
2:58 P	975	27.1	65	WSW	11	40.5	43	W	10
3:09 P	1283	21.5	69	WSW	9	40.4	44	W	10
3:23 P	1549	17.4	75	SW	12	41.5	43	W	8
3:25 P	1619	16.3	80	WSW	12	41.2	43	W	8
3:26 P	1503	17.3	80	WSW	12	41.1	42	W	9
3:38 P	1956	10.8	85	WSW	13	41.6	42	W	9
3:43 P	2195	10.3	88	SW	15	41.2	43	W	10
3:48 P	2260	17.6	65	WSW	13	41.2	43	W	11
3:53 P	2162	9.3	80	SW	13	40.9	43	W	10
3:58 P	2244	19.2	65	..	13	40.2	44	W	10
4:05 P	2368	19.1	63	..	13	40.0	45	W	8
4:07 P	2390	18.3	60	..	13	40.0	45	W	7
4:14 P	2290	19.3	60	..	14	39.8	45	W	7
4:15 P	2253	16.6	61	..	14	39.7	45	W	8
4:32 P	2085	10.3	88	..	14	39.7	45	W	9
4:40 P	2240	9.1	88	..	15	39.1	45	W	9
4:50 P	1950	12.9	88	..	11	39.1	46	W	8
4:58 P	2270	8.2	88	..	12	39.1	47	W	8
5:05 P	2090	9.4	86	..	13	39.1	48	W	10
5:14 P	1930	12.2	84	..	12	38.6	49	W	9
5:24 P	1665	14.7	83	SW	12	38.4	51	W	7
5:36 P	1602	15.4	82	SW	13	37.8	51	W	7
5:47 P	1422	17.4	78	WSW	12	37.7	53	W	7
6:05 P	1221	20.9	68	WSW	14	37.3	55	W	6
6:17 P	844	26.7	59	SW	12	37.3	55	W	5
6:28 P	563	31.2	56	WSW	11	37.1	57	W	5
6:28 P	195	37.1	57	W	5	..	..	..	..
6:28 P	15	38.0	..	..	..	..	..	..	..
Mar. 23.									
2:39 P	15	49.8	..	..	..	..	..	..	..
2:39 P	195	46.0	26	W	6	..	..	..	..
2:39 P	612	38.4	..	W	7	46.0	26	W	6
3:02 P	413	41.4	..	W	5	46.0	25	W	6
5:39 P	15	46.8	..	..	..	46.1	26	W	5
5:39 P	228	46.4	..	W	4	46.1	26	W	5
5:45 P	260	45.5	..	W	5	45.8	26	W	5
5:53 P	379	42.9	..	W	..	45.4	27	W	5
6:00 P	933	34.3	29	W	10	45.0	27	W	5
6:03 P	839	35.2	28	WSW	10	44.9	27	WSW	5

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1901. Mar. 23.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
6:12 P	1179	30.6	28	W	..	44.8	28	WSW	5
6:17 P	1300	31.9	27	WNW	14	44.8	28	WSW	7
6:20 P	1329	31.2	30	WNW	14	44.8	28	SW	6
6:31 P	1628	29.4	32	WNW	..	42.3	38	SSW	5
6:35 P	1641	28.4	33	WNW	..	42.0	41	SSW	5
6:50 P	1701	28.2	34	WNW	17	39.7	49	SSW	5
6:51 P	1730	30.9	25	WNW	17	39.7	49	SSW	5
6:57 P	1730	31.0	25	WNW	17	39.2	50	SSW	5
7:00 P	1820	31.4	23	WNW	..	38.9	52	SSW	4
7:05 P	2080	28.4	23	WNW	18	38.2	54	SSW	5
7:20 P	2432	26.5	18	WNW	20	38.0	56	SSW	5
7:40 P	2805	24.2	24	WNW	20	38.0	57	SW	5
7:56 P	3126	20.4	28	WNW	20	38.4	55	WSW	5
8:02 P	3280	18.6	29	WNW	20	38.6	54	WSW	5
8:14 P	3480	18.0	35	WNW	21	38.6	53	WSW	5
8:21 P	3175	21.7	38	..	21	38.4	53	WSW	5
8:30 P	3049	24.3	37	..	22	38.1	53	SW	5
8:38 P	3027	22.7	28	..	22	37.8	54	SW	5
9:00 P	3100	21.6	25	..	20	37.4	53	SW	6
9:20 P	3117	20.7	28	..	20	36.7	54	SW	5
9:25 P	2968	22.9	28	..	20	36.7	54	SW	5
9:50 P	3052	23.3	31	..	19	35.7	56	SSW	6
10:02 P	2840	24.8	37	WNW	17	35.5	56	SSW	6
10:25 P	2536	27.4	29	WNW	16	35.2	57	SW	6
10:39 P	2020	31.6	22	NW	15	35.2	57	SW	6
10:52 P	1701	33.4	13	NW	12	34.5	59	SSW	6
10:55 P	1602	33.4	12	..	12	34.4	60	SSW	6
10:56 P	1580	33.1	..	..	..	34.4	60	SSW	6
11:04 P	1430	34.4	35	NW	11	33.9	64	SSW	6
11:10 P	1059	36.8	43	..	..	36.8	64	SSW	6
11:12 P	978	35.9	43	..	..	35.9	64	SSW	6
11:15 P	692	39.3	37	W	6	33.8	65	SSW	6
11:17 P	817	38.1	43	..	6	33.7	66	SSW	6
11:27 P	446	41.4	40	SW	11	33.6	68	SSW	6
11:29 P	414	41.7	42	SW	11	33.6	68	SSW	6
11:29 P	195	33.6	68	SSW	6	..	..	..	..
11:29 P	15	34.1	..	..	..	..	..	..	..
Mar. 25.									
10:52 A	15	44.8	..	..	..	..	..	..	..
10:52 A	195	40.4	65	ENE	8	..	..	..	..
10:52 A	476	36.6	67	ENE	8	40.4	65	ENE	8
11:08 A	524	40.4	56	ENE	6	40.7	63	ENE	9
11:33 A	565	40.2	57	ENE	6	40.4	71	ENE	8
11:47 A	615	39.5	59	ENE	7	41.4	73	ENE	7
0:16 P	666	37.9	68	ENE	6	41.6	74	ENE	8
0:24 P	703	40.6	75	ENE	6	41.7	76	ENE	7
0:39 P	728	40.0	63	ENE	6	41.2	77	ENE	8

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1901. Mar. 25.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
0:45 P	893	41.8	78	ENE	6	41.2	77	ENE	8
0:56 P	958	41.6	77	E	6	40.6	76	ENE	6
1:31 P	935	40.9	78	E	6	41.3	78	ENE	9
1:38 P	1023	40.4	75	E	6	40.6	79	ENE	6
1:57 P	936	40.4	77	E	6	40.9	79	ENE	7
2:25 P	1183	39.4	72	ESE	6	41.4	78	E	6
2:30 P	1208	39.3	71	ESE	6	41.4	77	E	6
2:35 P	1208	38.8	72	ESE	6	42.0	77	E	6
2:48 P	1250	38.3	74	SE	6	41.1	80	ENE	5
3:00 P	1482	39.2	68	SE	6	40.7	81	ENE	7
3:05 P	1123	38.5	76	SE	6	40.4	81	ENE	7
3:09 P	1004	40.4	73	ESE	6	40.2	81	ENE	7
3:30 P	1270	38.4	70	SE	6	39.5	83	ENE	8
3:33 P	1294	38.9	69	SE	6	39.6	83	ENE	7
3:57 P	1358	40.2	67	SE	6	39.8	82	ENE	6
4:06 P	1446	39.5	64	SSE	6	39.5	82	ENE	6
4:19 P	1671	41.6	57	S	4	39.8	82	ENE	6
4:23 P	1461	39.6	63	S	6	39.9	83	ENE	6
4:26 P	1328	40.4	62	SSE	6	39.6	83	ENE	6
4:28 P	1435	40.2	63	SSE	8	39.5	84	ENE	6
4:33 P	1300	41.9	59	S	..	39.3	84	ENE	7
4:34 P	1220	40.9	65	SSE	7	39.2	84	ENE	6
4:41 P	872	42.1	59	SE	..	38.8	85	ENE	7
4:41 P	195	38.8	85	ENE	7	..	..	..	..
4:41 P	15	41.2	..	..	..	..	..	..	..
Oct. 22.									
11:12 A	15	61.3	..	..	..	..	..	..	..
11:12 A	195	59.1	58	WSW	8	..	..	..	..
11:12 A	384	55.0	58	WSW	11	59.1	58	WSW	8
11:22 A	609	51.3	62	WSW	13	59.9	57	WSW	8
11:38 A	858	47.9	71	WSW	15	60.4	55	WSW	9
11:42 A	1042	46.0	73	..	..	60.4	55	WSW	9
11:50 A	1144	49.1	74	W	20	60.5	54	WSW	10
11:58 A	1514	45.1	73	W	20	60.8	54	WSW	11
0:02 P	1621	47.1	14	WNW	20	60.8	53	WSW	11
0:12 P	1681	45.9	13	WNW	20	61.0	53	WSW	9
0:32 P	2060	40.3	..	WNW	19	61.6	53	W	11
0:48 P	2318	37.3	..	WNW	19	62.5	52	W	12
1:00 P	2407	36.3	..	WNW	19	62.6	52	W	11
1:10 P	2646	34.6	..	WNW	19	62.9	51	W	10
1:25 P	3049	28.6	..	WNW	19	63.5	49	W	10
1:40 P	3277	26.0	..	WNW	20	63.4	48	W	10
2:05 P	1103	51.1	..	..	13	62.7	48	WSW	10
2:15 P	1186	49.7	..	..	12	62.4	48	WSW	9
2:28 P	1270	48.4	..	..	12	62.4	48	W	9
2:39 P	1197	45.6	..	..	13	62.2	49	W	11
2:45 P	1224	44.4	..	..	13	62.2	49	W	10

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1901. Oct. 22.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
2:52 P	1107	45.9	..	..	13	62.4	49	W	10
3:15 P	1324	45.0	..	..	12	61.9	50	WSW	7
3:30 P	1207	45.5	..	..	13	61.0	52	WSW	9
4:00 P	995	48.0	..	..	14	60.5	52	W	9
4:13 P	1308	44.0	..	..	12	60.2	52	W	9
5:00 P	1310	43.2	..	..	14	58.4	47	WNW	9
5:38 P	1441	41.7	..	..	15	57.2	48	W	8
6:10 P	1441	41.4	..	..	16	56.5	49	W	8
7:25 P	1488	39.9	36	..	14	54.2	53	WSW	6
7:37 P	1322	41.2	43	..	13	54.6	53	WSW	8
7:50 P	1410	40.6	39	..	12	53.7	57	WSW	8
8:00 P	794	49.0	50	..	9	53.6	59	W	8
8:00 P	15	45.7	..	..	..	53.6	59	W	8
8:20 P	887	48.3	48	..	9	53.1	59	W	10
8:45 P	880	49.5	48	..	9	52.9	61	W	9
9:37 P	880	47.1	44	..	11	52.0	64	W	8
9:50 P	1080	43.9	43	..	12	51.6	65	W	8
10:25 P	1120	42.8	43	..	12	50.9	68	W	7
11:08 P	957	46.5	40	..	11	50.0	69	W	6
11:11 P	1182	45.0	33	..	12	50.0	69	WSW	6
11:25 P	1384	43.5	26	..	12	49.9	71	WSW	6
11:35 P	1322	43.9	28	..	11	49.7	71	WSW	6
11:43 P	1416	43.0	36	..	13	49.2	71	WSW	7
11:43 P	15	40.7	..	..	..	49.2	71	WSW	7
Oct. 23.									
0:15 A	1527	43.9	38	..	14	48.5	72	WSW	8
1:25 A	1512	43.0	40	..	13	47.3	73	W	9
1:52 A	1517	43.0	43	..	13	47.0	73	W	10
3:00 A	1412	44.2	32	..	15	47.7	65	W	9
4:00 A	1277	47.5	11	..	14	48.0	62	WSW	8
4:15 A	1277	48.0	6	..	15	48.2	62	WSW	9
4:40 A	1164	51.0	5	..	15	49.3	52	SW	9
4:50 A	1210	49.8	3	..	14	50.1	48	SW	8
5:30 A	851	53.3	23	..	16	50.8	48	SW	9
6:00 A	1034	51.3	17	..	16	50.0	48	SW	8
6:45 A	983	51.7	8	..	15	48.4	52	SW	9
7:03 A	1026	54.8	10	..	15	49.2	49	SW	10
7:15 A	1103	54.2	25	..	13	50.1	47	SW	10
7:30 A	1260	53.8	26	..	14	51.0	47	SW	10
8:00 A	1195	55.8	35	..	13	53.6	46	SW	10
8:23 A	1340	53.9	24	..	13	55.4	46	SW	9
9:00 A	1180	52.4	44	..	14	59.0	41	SSW	8
9:30 A	1154	52.9	44	..	..	61.2	39	SSW	8
9:45 A	1040	54.3	48	..	..	62.0	38	SSW	9
10:00 A	930	55.5	46	..	..	64.0	38	SW	10
10:06 A	1186	53.9	48	..	..	64.2	38	SW	9
10:30 A	1140	54.8	..	..	..	66.0	38	SW	9

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1901. Oct. 23.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
11:00 A	1100	56.9	28	..	17	68.0	37	SW	12
11:09 A	675	60.0	28	..	17	68.2	37	SW	13
11:30 A	535	62.0	..	..	..	69.1	37	SW	13
11:35 A	807	60.8	33	..	18	69.5	37	SW	13
12:00 A	800	59.0	37	..	18	70.4	37	SW	13
0:30 P	800	59.0	46	..	..	70.8	35	SW	13
1:08 P	775	62.0	48	..	..	71.7	34	WSW	14
2:10 P	660	62.5	43	..	17	71.5	34	WSW	15
2.20 P	550	64.3	43	..	15	71.2	35	WSW	15
2:30 P	440	65.8	41	..	15	71.1	35	WSW	14
2:42 P	330	67.6	40	..	15	71.0	36	WSW	14
2:54 P	220	69.3	38	..	13	71.4	36	WSW	13
3:05 P	110	72.0	35	..	..	71.4	36	WSW	12
3:12 P	50	73.1	40	..	..	71.4	37	WSW	11
3:12 P	15	73.6	..	..	..	..	..	..	..
Nov. 8.									
2:00 P	15	50.8	47	..	..	..	..	..	..
2:00 P	195	47.3	53	NW	7	..	..	..	..
2:00 P	358	44.9	64	NNW	6	47.3	53	NW	7
2:04 P	295	46.0	58	NNW	6	47.4	53	NW	6
2:23 P	322	45.4	59	NNW	6	47.2	54	NW	6
2:27 P	531	42.5	68	NNW	7	47.2	54	NW	6
2:54 P	778	38.2	77	NW	7	47.1	54	NW	7
3:06 P	602	40.2	74	NNW	7	47.0	54	NNW	6
3:24 P	818	38.2	82	..	8	47.0	54	NNW	5
3:33 P	1388	31.0	94	WNW	10	47.0	55	NNW	6
4:02 P	1497	28.7	100	NW	10	45.9	58	NNW	4
4:15 P	1522	28.0	93	..	10	45.6	58	NNW	5
4:31 P	1366	29.6	94	..	8	45.4	59	NNW	5
4:41 P	1222	31.4	92	NNW	9	45.2	60	NNW	5
5:00 P	1330	29.4	89	NNW	9	45.3	61	NNW	5
5:35 P	1492	28.0	98	..	11	44.8	62	NNW	5
5:48 P	1564	27.2	95	..	11	44.4	63	N	5
6:15 P	1588	26.8	92	..	11	44.3	64	NNW	5
6:36 P	1491	27.5	93	..	9	44.2	64	NNW	5
6:45 P	1344	29.0	91	..	9	44.1	64	NNW	5
7:15 P	1236	30.9	82	..	9	43.0	64	NNW	5
8:27 P	1488	28.0	77	..	8	42.9	66	WSW	2
8:50 P	1427	28.9	74	..	8	43.0	66	W	3
8:56 P	1000	34.8	70	..	7	43.0	66	W	3
9:05 P	1324	31.1	69	..	8	43.3	65	WNW	4
9:14 P	670	38.0	74	..	6	43.4	65	W	4
9:16 P	220	43.0	..	..	..	43.6	65	W	4
9:16 P	195	43.6	65	W	4	..	..	..	..
9:16 P	15	39.3	94	..	..	..	..	..	..
Nov. 9.									
2:06 P	15	52.5	32	..	..	..	..	..	..

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1901. Nov. 9.		°F.	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
2:06 P	195	49.3	36	WSW	6	..	..	..	..
2:06 P	281	46.8	36	WSW	6	49.3	36	WSW	6
2:09 P	406	44.9	37	WSW	6	49.0	36	WSW	6
2:34 P	325	46.0	37	WSW	6	49.0	36	WSW	5
2:50 P	400	45.0	39	W	6	48.3	38	WSW	7
2:53 P	491	43.4	41	W	6	48.3	38	WSW	7
3:04 P	542	42.6	42	W	7	48.1	38	WSW	6
3:19 P	466	42.9	41	W	7	47.7	38	W	7
3:24 P	646	40.5	43	W	8	47.5	38	W	7
3:45 P	627	40.8	48	W	8	47.2	40	W	6
3:51 P	865	36.9	55	W	8	47.2	42	W	6
4:05 P	1071	33.1	59	W	8	46.9	43	W	8
4:12 P	1210	31.2	100	W	8	46.8	56	W	8
4:26 P	927	36.0	100	W	8	44.8	65	W	8
4:31 P	630	40.8	100	..	..	44.5	68	W	10
4:35 P	504	43.5	..	..	..	44.3	68	W	8
4:37 P	400	45.1	..	..	..	44.2	69	W	7
4:37 P	195	44.2	69	W	7	..	..	..	..
4:37 P	15	46.8	62	..	..	..	..	..	..
Nov. 30.									
8:51 A	15	22.7	90	..	..	..	..	..	..
8:51 A	195	21.3	84	WNW	7	..	..	..	..
8:51 A	241	21.6	80	NW	14	21.3	84	WNW	7
8:57 A	405	23.0	79	NW	13	21.6	84	WNW	7
9:08 A	637	20.8	80	NNW	13	21.8	83	NW	8
9:17 A	870	19.2	83	NNW	11	22.0	83	NW	8
9:31 A	991	18.7	86	NNW	10	23.5	81	NW	9
9:49 A	1153	16.2	88	NNW	11	24.2	76	NW	9
10:00 A	1131	17.0	88	NNW	10	24.7	74	NW	9
10:12 A	1065	18.0	80	NW	10	25.6	73	NW	7
11:02 A	1081	17.4	74	NW	10	27.1	71	NW	9
11:23 A	1292	15.0	77	NW	10	28.5	66	NW	9
11:35 A	1472	12.9	80	NW	9	28.8	63	NW	11
11:42 A	1443	11.9	82	..	9	28.8	62	NW	12
11:46 A	1687	13.7	63	NW	9	28.9	62	NW	11
11:49 A	1475	12.5	..	NW	9	29.0	58	NW	10
0:18 P	1443	12.3	82	NW	10	29.7	54	NW	11
0:23 P	2044	14.0	40	..	..	29.7	53	NW	11
0:32 P	2485	9.8	30	NW	18	29.8	53	NW	11
0:35 P	2437	11.0	28	NW	18	29.9	53	NW	10
0:48 P	2465	11.1	20	NW	18	29.1	53	NW	10
1:02 P	2733	9.7	17	..	..	29.5	53	NW	10
1:05 P	2844	9.8	16	..	19	29.4	52	NW	10
1:08 P	3085	7.2	16	..	19	29.5	52	NW	11
1:11 P	3338	5.0	15	..	..	29.5	52	NW	11
1:11 P	195	29.5	52	NW	11	..	..	..	..
1:11 P	15	32.8	48	..	..	..	..	..	..

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1901. Dec. 5.		°F	p. ct.		m.p.s.	°F.	p. ct.		m.p.s.
9:11 A	15	16.6	..	..	..	..	..	..	..
9:11 A	195	12.8	76	NW	7	..	..	..	..
9:11 A	281	13.5	65	NW	..	12.8	76	NW	7
9:18 A	436	11.0	68	NNW	..	12.9	73	NW	7
9:25 A	638	8.9	67	..	..	13.5	72	NW	7
9:30 A	718	8.7	67	NNW	..	13.6	72	NW	8
9:35 A	804	9.3	65	..	..	13.8	71	NW	9
9:53 A	808	8.7	65	NNW	..	14.1	70	NW	10
10:57 A	641	9.2	70	..	..	15.9	67	NW	10
11:19 A	337	13.4	60	NW	..	16.0	66	NW	9
11:19 A	15	20.7	..	..	..	16.0	66	NW	9
11:22 A	684	9.4	71	NNW	..	16.7	65	NW	9
0:35 P	376	15.5	64	NW	..	17.8	65	WNW	8
0:35 P	15	21.6	..	..	..	17.8	65	WNW	8
0:41 P	597	12.3	68	..	..	17.9	64	WNW	9
1:45 P	554	13.2	63	NW	..	19.2	58	NW	9
1:50 P	442	15.1	57	NW	..	19.7	58	NW	7
1:54 P	742	11.6	63	NW	..	19.8	58	NW	7
2:00 P	865	11.4	65	..	..	19.8	57	NW	6
2:05 P	662	18.9	50	..	..	19.9	57	NW	7
3:00 P	503	14.2	60	NW	..	19.9	53	NW	8
3:10 P	546	13.8	58	NW	..	19.8	52	NW	8
3:30 P	660	11.5	53	NW	..	19.7	52	NW	9
3:51 P	887	13.2	..	..	..	19.4	52	NW	7
4:06 P	834	14.2	..	..	..	18.8	54	NW	6
4:10 P	883	14.3	..	..	..	18.7	54	NW	6
4:13 P	1029	14.7	..	..	..	18.4	54	NW	6
4:18 P	1094	16.1	..	..	..	18.2	54	NW	6
4:21 P	1155	16.2	..	..	..	18.0	54	NW	6
4:27 P	1316	14.4	..	..	..	17.8	55	NNW	6
4:35 P	1308	15.1	..	..	..	17.8	55	NNW	6
4:40 P	1343	14.2	..	..	..	17.8	55	NNW	6
5:19 P	898	17.4	16	..	..	16.8	56	NNW	8
5:24 P	792	10.1	50	..	..	16.7	55	NNW	8
5:28 P	462	13.8	55	..	..	16.6	55	NNW	8
5:28 P	195	16.6	55	NNW	8	..	..	..	..
5:28 P	15	17.1	..	..	..	..	..	..	..
1902. Jan. 9.									
4:22 P	15	32.2	53	..	..	..	..	..	..
4:22 P	195	30.8	56	WNW	7	..	..	..	..
4:22 P	361	28.7	60	..	8	30.8	56	WNW	7
4:29 P	539	25.7	63	WNW	8	30.4	56	WNW	7
4:38 P	732	22.6	67	WNW	8	30.2	57	WNW	8
4:41 P	818	21.1	70	WNW	8	30.1	57	WNW	8
4:54 P	792	21.4	70	WNW	8	29.8	56	WNW	7
4:56 P	983	20.5	71	WNW	8	29.8	57	WNW	7

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1902. Jan. 9.		°F.	*p.ct.*		*m.p.s.*	°F.	*p.ct.*		*m.p.s.*
4:57 P	1038	21.5	65	. .	9	29.8	57	WNW	7
4:59 P	1188	21.8	51	NW	10	29.8	57	WNW	7
5:01 P	1317	22.0	50	NW	10	29.8	57	WNW	7
5:05 P	1428	21.7	50	. .	10	29.7	57	WNW	7
5:22 P	1280	22.7	44	. .	9	29.1	58	WNW	7
5:32 P	1358	21.0	45	. .	8	29.1	59	WNW	7
5:40 P	1460	20.4	45	. .	8	29.1	60	WNW	7
6:18 P	1302	22.1	44	. .	7	28.9	61	WNW	7
6:31 P	1426	19.9	46	. .	7	28.8	62	WNW	7
7:05 P	1536	18.5	47	. .	8	28.3	65	W	6
7:12 P	1570	17.7	47	. .	8	28.1	66	W	6
7:28 P	1851	16.5	48	. .	8	27.9	69	W	6
7:40 P	1702	17.1	51	. .	8	27.8	70	W	6
7:48 P	1861	14.9	55	. .	10	27.3	71	W	5
7:50 P	1957	17.1	47	. .	14	27.3	72	W	5
7:57 P	2675	12.8	49	. .	14	27.3	72	W	5
8:22 P	2527	14.5	50	NW	13	27.1	73	W	5
8:37 P	2684	13.4	47	NW	13	26.9	74	W	5
8:39 P	2713	12.4	46	. .	13	26.6	75	W	5
8:50 P	2987	10.0	41	NW	16	26.7	76	W	5
8:55 P	3011	9.7	40	NW	16	26.7	76	W	5
9:01 P	2930	10.7	38	NW	15	26.8	76	W	5
9:16 P	2665	13.7	39	NW	15	26.6	77	W	6
9:23 P	2396	16.6	45	NW	13	26.5	79	W	6
9:31 P	2273	18.0	47	NW	15	26.5	79	WSW	6
9:39 P	2076	18.8	46	NW	13	26.4	79	WSW	6
9:41 P	1990	18.7	46	. .	12	26.4	80	WSW	6
9:44 P	1783	13.2	83	. .	10	26.4	80	WSW	6
10:00 P	1733	13.6	86	WNW	10	26.4	81	W	6
10:07 P	1198	19.4	70	WNW	7	26.5	81	W	6
10:13 P	994	22.2	58	. .	6	26.4	81	W	6
10:18 P	824	24.8	55	NW	7	26.4	81	W	6
10:25 P	501	27.7	69	NW	7	26.3	82	W	6
10:27 P	523	28.1	65	NW	7	26.3	82	W	7
10:28 P	360	26.6	85	W	8	26.3	82	W	7
10:29 P	280	27.0	84	W	. .	26.3	82	W	7
10:30 P	253	26.7	83	W	. .	26.3	82	W	7
10:30 P	195	26.3	82	W	7	. .	. .	. .	. .
10:30 P	15	12.0	96	. .	. .	. .	. .	. .	. .
Feb. 5.									
3:20 P	15	22.5	43	. .	. .	. .	. .	. .	. .
3:20 P	195	19.3	46	NW	7	. .	. .	. .	. .
3:20 P	217	20.0	46	NW	6	19.3	46	NW	7
3:31 P	246	18.3	47	NW	6	19.1	47	NW	7
3:38 P	528	13.3	58	NW	8	18.6	49	NW	8
3:54 P	743	9.6	66	NW	6	18.3	50	NW	8
3:55 P	667	11.0	64	NW	6	18.3	50	WNW	7

Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1902. Feb. 5.		°F.	*p.ct.*		*m.p.s.*	°F	*p.ct.*		*m.p.s.*
4:25 P	840	7.5	64	NW	5	17.6	50	WNW	8
4:46 P	938	5.4	69	NW	5	16.8	51	WNW	7
4:51 P	1102	2.7	73	NW	4	16.8	51	NW	7
5:09 P	1238	0.4	76	NW	4	16.2	51	NW	7
5:36 P	1192	1.2	83	NW	4	15.8	51	NW	7
5:46 P	1668	–3.7	79	. .	4	15.5	52	NW	8
5:52 P	1536	–2.4	78	. .	. .	15.3	52	NW	8
5:58 P	1796	–5.3	73	. .	. .	15.3	52	NW	8
7:00 P	1741	–3.5	63	. .	. .	14.0	56	NW	8
7:05 P	2117	–5.3	61	. .	. .	14.1	55	NW	8
7:12 P	2142	–5.8	59	. .	. .	14.3	55	NW	8
8:05 P	1828	–1.7	52	. .	. .	13.0	55	NW	9
9:00 P	1967	–4.4	49	. .	. .	12.9	55	WNW	7
9:10 P	1854	–3.5	49	. .	. .	12.6	55	WNW	6
9:12 P	1678	–3.5	49	. .	. .	12.5	55	WNW	6
9:20 P	1260	+3.3	49	. .	5	12.1	55	NW	7
10:00 P	1308	+2.4	50	. .	5	11.8	55	NW	7
10:30 P	1447	–0.5	52	. .	5	10.5	56	NW	7
11:00 P	1439	–0.5	51	. .	4	10.0	55	NW	8
Feb. 6.									
0:25 A	1414	–1.5	46	. .	4	9.3	56	WNW	8
0:35 A	1370	–1.0	46	. .	4	9.1	56	W	6
0:47 A	1381	–1.3	48	. .	4	9.1	57	W	5
1:00 A	1458	–2.2	50	. .	4	8.8	58	W	5
1:07 A	1420	–1.0	50	. .	4	8.7	59	W	6
1:11 A	1960	+3.7	46	. .	11	8.7	59	W	6
1:16 A	2566	+1.0	42	. .	13	8.7	59	W	6
1:20 A	2773	–0.5	39	. .	13	8.6	59	W	6
1:30 A	3295	. .	38	. .	13	8.5	60	WNW	7
2:00 A	3268	. .	37	. .	13	8.3	61	WNW	6
2:30 A	3242	. .	38	. .	12	8.3	62	WNW	7
3:00 A	3228	. .	38	. .	13	8.5	62	WNW	7
3:30 A	3158	. .	36	. .	12	8.7	62	WNW	7
4:00 A	2989	. .	34	. .	14	8.5	63	WNW	7
4:30 A	3258	. .	41	. .	16	8.5	63	W	7
5:00 A	3352	. .	48	. .	17	8.7	63	WNW	10
5:30 A	3320	. .	52	. .	17	8.7	64	WNW	10
6:00 A	3396	. .	52	. .	17	8.3	64	WNW	10
6:30 A	3310	. .	49	. .	15	8.0	65	WNW	10
7:10 A	3280	. .	. .	. .	16	7.9	66	WNW	9
8:00 A	3161	. .	37	. .	16	8.5	61	WNW	9
8:30 A	3248	. .	. .	. .	16	10.0	64	WNW	10
9:00 A	4216	. .	44	. .	20	11.4	62	WNW	10
9:42 A	4144	. .	45	WNW	18	14.0	58	WNW	9
10:00 A	4216	. .	45	WNW	20	14.6	56	WNW	11
10:11 A	4286	. .	45	WNW	20	15.1	56	WNW	11
10:32 A	4065	. .	46	WNW	17	15.8	53	WNW	10

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1902. Feb. 6.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
11:00 A	4074	..	48	WNW	20	17.8	50	WNW	9
11:30 A	3409	..	49	WNW	17	19.3	45	WNW	10
11:43 A	3237	..	51	WNW	17	19.8	44	WNW	10
0:01 P	2696	..	49	NW	13	20.8	42	WNW	10
0:16 P	2294	..	50	NW	13	21.0	41	WNW	8
0:28 P	1908	..	47	WNW	12	21.1	39	WNW	9
1:03 P	1815	..	54	WNW	14	21.7	38	WNW	10
1:40 P	1769	..	44	NW	12	22.7	36	W	8
2:00 P	1887	..	41	NW	11	22.7	35	W	9
2:20 P	1873	..	36	NW	11	23.5	34	WNW	9
2:31 P	1768	..	28	NW	10	23.7	34	WNW	9
2:45 P	1762	..	24	WNW	11	23.9	34	WNW	9
2:52 P	1684	..	21	WNW	11	24.0	34	WNW	8
3:10 P	1357	..	38	WNW	13	23.9	33	WNW	8
3:26 P	742	..	43	WNW	13	24.0	32	W	9
3:30 P	546	..	43	WNW	9	24.0	32	W	9
3:35 P	322	..	43	WNW	..	24.1	32	W	9
3:35 P	195	24.1	32	W	9	..	..	..	..
3:35 P	15	27.3	30	..	..	..	..	..	..
Mar. 5.									
11:40 A	15	32.8	..	..	..	..	..	..	..
11:40 A	195	30.1	88	ENE	8	..	..	..	..
11:40 A	421	25.6	98	ENE	9	30.1	88	ENE	8
11:44 A	551	23.4	100	ENE	10	30.1	90	ENE	8
11:50 A	797	20.8	100	..	9	29.6	91	ENE	8
11:54 A	831	20.0	100	..	9	29.4	92	ENE	8
0:02 P	1018	24.3	93	E	12	29.2	93	ENE	9
0:10 P	1241	22.0	92	..	11	28.6	95	ENE	8
0:25 P	1300	21.6	65	..	12	28.0	98	ENE	8
0:36 P	1387	21.4	55	..	13	27.9	98	ENE	8
0:40 P	1387	21.6	54	E	13	27.9	98	NE	9
0:50 P	1486	21.2	55	..	13	27.8	99	NE	9
0:54 P	1468	21.5	55	..	13	27.7	99	NE	9
1:00 P	1658	19.7	56	..	14	27.7	100	NE	9
1:04 P	1750	22.9	57	..	14	27.7	100	NE	9
1:10 P	1800	24.2	57	ESE	14	27.6	100	NE	9
1:16 P	1932	25.3	57	..	14	27.6	100	NE	9
1:20 P	1945	25.6	56	..	14	27.6	100	NE	9
1:30 P	1942	26.6	56	..	13	27.7	100	NE	9
1:35 P	1983	26.9	56	ESE	11	27.7	100	NE	10
1:40 P	2100	26.6	53	..	..	27.8	100	NE	9
1:45 P	2221	25.1	51	..	..	27.9	100	NE	11
1:50 P	2259	24.7	50	..	..	28.2	100	NE	11
2:00 P	2048	27.7	49	..	..	28.2	100	NE	11
2:03 P	1971	27.6	49	..	..	28.2	100	ENE	11
2:05 P	1841	25.6	..	..	..	28.2	100	ENE	11
2:07 P	1628	23.6	..	..	..	28.2	100	ENE	11

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1902. Mar. 5.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
2:08 P	1416	23.6	..	..	..	28.2	100	ENE	11
2:15 P	1228	23.7	58	..	14	28.1	100	ENE	11
2:18 P	1185	24.3	58	..	14	28.0	100	ENE	11
2:18 P	195	28.0	100	ENE	11	..	..	..	..
2:18 P	15	30.8	..	..	..	..	..	..	..
April 3.									
10:35 A	15	43.0	50	..	..	..	..	..	..
10:35 A	195	39.2	53	WNW	12	..	..	..	..
10:35 A	518	32.5	62	WNW	13	39.2	53	WNW	12
10:49 A	765	28.6	72	WNW	11	39.9	53	WNW	10
10:54 A	651	29.6	70	WNW	11	39.4	53	WNW	10
11:07 A	808	27.8	72	WNW	10	40.2	51	WNW	9
11:20 A	1101	24.4	74	WNW	11	41.7	48	WNW	8
11:23 A	1291	21.7	77	WNW	10	41.4	47	WNW	8
11:41 A	1158	22.7	84	WNW	10	41.1	47	WNW	11
11:51 A	1381	20.2	89	WNW	10	41.3	47	WNW	9
0:10 P	1393	20.0	..	WNW	9	41.1	45	WNW	9
0:29 P	1707	16.0	..	WNW	8	41.8	45	WNW	9
0:41 P	1861	13.9	..	NW	8	42.2	44	WNW	7
1:09 P	1869	13.5	..	NW	9	43.4	46	WNW	8
1:16 P	1442	21.0	..	NW	8	44.2	45	WNW	8
1:26 P	889	30.7	..	WNW	9	43.4	43	WNW	7
1:30 P	1257	25.2	..	NW	8	42.9	44	WNW	7
2:12 P	894	31.4	..	NW	7	44.9	41	WNW	5
2:14 P	933	30.3	..	NW	7	44.8	41	WNW	5
2:23 P	1522	21.0	..	NW	8	44.8	41	WNW	6
2:29 P	1622	21.2	..	NW	8	46.4	39	WNW	7
2:41 P	992	31.4	..	WNW	6	45.6	39	WNW	7
2:53 P	1607	22.0	..	WNW	7	44.9	39	NW	7
3:13 P	581	37.3	..	..	6	45.4	40	NW	6
3:23 P	1064	30.0	..	..	7	45.4	40	NW	6
3:27 P	893	33.2	..	..	6	45.5	39	NW	6
3:52 P	1147	30.0	..	..	8	46.3	39	WNW	8
3:58 P	1710	20.4	..	..	7	45.3	39	WNW	9
4:04 P	1933	16.6	..	NW	7	45.3	40	WNW	8
4:23 P	1172	28.0	..	WNW	7	45.9	41	WNW	10
4:28 P	1641	20.3	..	WNW	7	45.2	41	WNW	10
4:44 P	1882	17.8	..	NW	8	44.4	42	WNW	8
4:49 P	2080	21.1	..	NW	10	44.1	43	WNW	9
4:55 P	2286	22.9	..	NNW	10	44.1	43	WNW	10
5:05 P	2307	24.6	..	NNW	10	43.5	43	WNW	10
5:36 P	2533	24.6	..	NNW	9	43.0	44	WNW	9
5:40 P	2412	25.9	..	NNW	9	43.0	44	WNW	8
5:48 P	2407	26.2	..	NNW	10	42.9	44	WNW	8
5:51 P	2377	26.5	..	NNW	9	42.7	44	WNW	9
6:01 P	2318	26.0	..	NNW	8	42.2	46	WNW	9
6:17 P	2325	26.5	..	NNW	9	41.3	48	W	7

Date and Hour.	At Different Heights. Metres above sea.	At Different Heights. Air Temperature.	At Different Heights. Relative Humidity.	At Different Heights. Wind. Dir.	At Different Heights. Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	On Blue Hill, 195 m. Relative Humidity.	On Blue Hill, 195 m. Wind. Dir.	On Blue Hill, 195 m. Wind. Vel.	Date and Hour.	At Different Heights. Metres above sea.	At Different Heights. Air Temperature.	At Different Heights. Relative Humidity.	At Different Heights. Wind. Dir.	At Different Heights. Wind. Vel.	On Blue Hill, 195 m. Air Temperature.	On Blue Hill, 195 m. Relative Humidity.	On Blue Hill, 195 m. Wind. Dir.	On Blue Hill, 195 m. Wind. Vel.
1902. April 3.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*	**1902.** May 1.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*
6:22 P	2529	26.8	..	NNW	10	41.1	51	W	6	0:31 P	2404	29.2	100	..	14	52.7	80	WNW	7
6:26 P	2709	24.9	..	..	10	40.7	52	W	5	1:11 P	2255	30.7	97	NNW	14	57.2	69	NW	8
6:31 P	2764	23.9	..	..	8	40.2	53	W	6	1:24 P	2002	33.8	76	..	..	57.9	67	NW	7
6:45 P	2701	24.6	..	..	8	39.1	55	W	7	2:57 P	1963	31.9	95	NNW	13	58.8	63	NW	6
6:56 P	2503	26.9	..	..	9	39.0	56	W	7	3:12 P	1922	32.8	75	NNW	..	60.3	56	NW	10
7:15 P	2346	26.1	..	..	11	38.6	58	W	7	3:15 P	2297	33.1	68	..	..	59.9	56	NW	11
7:26 P	2266	25.3	..	..	11	38.5	59	W	7	3:19 P	2568	31.3	62	..	17	59.7	57	NW	12
7:43 P	2156	23.2	..	..	10	37.7	60	W	7	3:24 P	2633	29.2	65	NNW	18	59.4	57	NW	12
7:52 P	2152	23.0	..	..	10	37.5	60	W	7	3:31 P	2580	27.5	63	NNW	18	59.4	58	NW	12
7:55 P	2203	26.8	..	..	10	37.4	61	W	6	3:51 P	3091	24.5	58	NNW	18	58.9	58	NW	11
8:12 P	2248	26.9	..	..	10	37.2	62	W	6	3:58 P	3077	25.5	50	..	17	58.7	58	NW	11
8:22 P	1943	22.3	..	..	10	36.9	63	W	6	4.05 P	3092	27.6	40	..	17	58.7	58	NW	10
8:38 P	1905	19.0	..	N	8	36.6	65	W	5	4:16 P	3135	25.0	50	NNW	17	59.4	57	NW	11
8:41 P	1742	20.1	..	..	9	36.4	65	W	5	4:52 P	3322	21.0	..	..	19	58.4	58	NW	11
8:55 P	1473	21.8	..	NW	9	36.2	66	W	5	4:58 P	3363	20.1	55	NNW	19	57.0	60	NW	12
9:02 P	1375	23.1	..	NW	9	35.8	67	W	5	5:20 P	3501	17.4	76	NNW	21	56.6	61	NW	12
9:07 P	1260	24.3	..	NW	9	35.7	68	WNW	5	5:26 P	3532	18.1	75	NNW	21	56.5	61	NW	12
9:14 P	1059	26.3	..	..	9	35.5	68	WNW	4	5:41 P	3491	18.1	77	NNW	21	56.4	60	NW	12
9:20 P	800	30.0	..	N	10	35.2	68	WNW	5	5:43 P	3534	18.0	76	NNW	21	56.5	60	NW	12
9:26 P	864	29.3	..	..	10	35.1	69	WNW	4	5:53 P	3128	22.1	79	..	19	56.0	61	NW	12
9.30 P	690	31.3	..	..	10	35.0	69	NW	5	5:57 P	3100	23.5	75	NNW	19	55.9	61	NW	13
9:35 P	508	33.7	..	N	9	35.0	69	NW	5	6:14 P	2958	24.4	72	NNW	19	54.5	62	NW	13
9:40 P	399	35.1	..	..	9	35.0	69	NW	5	7:55 P	2706	30.2	57	NNW	19	51.0	70	NW	10
9:43 P	369	36.4	..	NW	9	35.0	67	NW	5	8:00 P	2644	29.7	57	NNW	16	51.0	72	NW	9
9:45 P	330	36.8	..	..	..	35.0	67	NW	5	8:13 P	2571	29.0	60	..	16	50.4	73	NW	8
9:45 P	195	35.0	67	NW	5	..	..	..	..	8:18 P	2512	29.6	68	..	16	50.3	74	NW	8
9:45 P	15	35.4	76	..	..	..	..	..	..	8:36 P	2202	32.8	80	..	13	50.5	75	NW	10
May 1.										8:37 P	2162	32.4	84	..	..	50.2	75	NW	10
10:04 A	15	56.0	61	..	..	..	..	..	..	8:40 P	1513	35.4	98	..	7	50.2	76	WNW	10
10:04 A	195	52.8	67	NW	9	..	..	..	..	8:45 P	1243	41.0	83	..	..	50.0	76	WNW	10
10:04 A	328	50.3	80	NW	10	52.8	67	NW	9	8:49 P	1432	37.7	94	..	9	49.9	77	WNW	10
10:09 A	430	48.1	83	NW	..	52.7	67	NW	8	9:10 P	1078	41.7	85	..	11	49.7	78	NW	9
10:12 A	552	44.5	95	NW	..	52.7	67	NW	8	9:45 P	809	44.4	80	N	11	48.9	80	NW	8
10:27 A	754	42.3	100	NNW	..	53.1	66	NW	8	9:52 P	570	47.5	75	N	16	48.8	80	NW	8
10:48 A	773	42.2	100	NNW	..	52.9	68	NW	8	10:00 P	282	48.3	75	NNW	16	48.6	81	NW	8
10:53 A	1137	38.9	100	..	..	52.6	69	NW	8	10:01 P	246	48.9	..	W	..	48.6	81	WNW	8
11:08 A	965	39.8	100	NNW	..	51.9	76	NW	8	10:01 P	195	48.6	81	WNW	8	..	..	..	..
11:17 A	1231	40.0	100	..	..	53.7	73	NW	6	10:01 P	15	50.5	..	..	..	..	..	..	..
11:27 A	1151	39.1	100	NNW	..	53.7	73	NW	7	3:24 P	* 15	62.0	53	..	..	..	..	..	..
11:33 A	1135	40.1	88	NNW	..	54.1	70	NW	6	3:24 P	195	59.4	57	NW	12	..	..	..	..
11:37 A	1316	39.0	92	NNW	..	54.8	69	NW	6	3:24 P	602	51.5	..	..	..	59.4	57	NW	12
11:45 A	1644	34.8	88	NNW	..	55.5	68	NW	8	3:31 P	670	50.1	..	..	..	59.4	58	NW	12
11:49 A	1826	35.5	97	..	..	54.3	65	NW	8	3:51 P	932	45.5	..	..	..	58.9	58	NW	12
0:01 P	1346	39.7	98	..	11	53.8	65	NW	6	3:58 P	960	44.5	..	..	..	58.7	58	NW	11
0:09 P	2012	32.7	92	NNW	12	54.0	71	WNW	6	4:05 P	990	45.0	..	..	..	58.7	58	NW	10
0:15 P	2101	33.3	88	..	12	54.1	72	WNW	7	4:16 P	1112	42.8	..	..	..	59.4	57	NW	11
0:21 P	2273	30.6	86	..	14	53.9	72	WNW	8	4:28 P	1150	41.0	..	..	..	59.0	57	NW	11

* Second meteorograph attached.

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1902. May 1.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
4:34 P	1172	40.7	..	..	..	58.9	58	NW	11
4:52 P	1097	41.1	..	..	..	58.4	58	NW	11
5:11 P	1237	38.8	..	..	..	56.8	60	NW	12
5:19 P	1264	39.2	..	..	..	56.7	61	NW	12
5:26 P	1241	39.2	..	..	..	56.5	61	NW	12
5:41 P	1101	39.8	..	..	..	56.4	60	NW	12
5:43 P	1068	40.8	..	..	..	56.5	60	NW	12
5:46 P	1046	41.1	..	..	..	56.3	60	NW	12
5:56 P	710	46.2	..	..	..	55.9	61	NW	12
6:07 P	641	47.4	..	..	..	55.1	61	NW	13
6:14 P	646	46.9	..	..	..	54.5	62	NW	13
7:45 P	640	45.9	..	..	..	51.6	68	NW	11
7:55 P	339	49.6	..	..	..	51.0	70	NW	10
8:00 P	331	49.8	..	..	..	51.0	72	NW	9
8:00 P	195	51.0	72	NW	9	..	..	..	..
8:00 P	15	53.5	68	..	..	..	..	..	..
June 5.									
8:55 P	15	51.2	89	..	..	..	..	..	..
8:55 P	195	50.4	85	SSW	7	..	..	..	..
8:55 P	368	48.9	85	SW	11	50.4	85	SSW	7
9:00 P	472	48.3	66	..	9	50.3	88	SSW	6
9:15 P	607	50.2	53	WSW	8	50.1	91	SSW	6
9:27 P	607	50.0	58	..	9	49.9	93	SW	7
10.00 P	514	50.7	56	..	8	49.6	98	SSW	6
10:30 P	497	51.3	51	..	8	48.7	96	SW	5
10:45 P	400	49.0	78	..	12	48.3	97	SW	5
11:00 P	394	50.0	74	..	11	48.1	98	SW	6
11:30 P	394	51.8	67	..	11	47.3	100	WSW	6
12:00 P	394	51.3	67	..	..	47.2	100	WSW	6
12:00 P	195	47.2	100	WSW	6	..	..	..	..
12:00 P	15	48.7	100	..	..	..	..	..	..
Aug. 7.									
9:27 A	15	70.4	61	..	5	..	..	..	..
9:27 A	78	69.2	..	..	..	..	..	..	..
9:27 A	195	66.3	67	W	8	..	..	..	..
9:27 A	440	62.4	..	W	9	66.3	67	W	8
9:29 A	419	62.8	..	W	9	66.3	67	W	9
9:45 A	790	56.3	..	W	12	66.8	68	WNW	10
9:55 A	871	55.0	..	W	11	66.6	63	WNW	10
10:10 A	709	58.8	..	W	10	67.8	61	WNW	10
10:18 A	891	56.0	..	W	10	67.8	59	WNW	10
10:29 A	1235	52.8	..	W	13	68.4	61	WNW	9
10:36 A	1406	49.8	..	..	15	69.0	60	W	8
10:45 A	1549	50.2	..	W	13	68.8	59	W	8
11:00 A	2005	45.5	..	W	13	69.0	54	W	9
11:05 A	2093	45.1	..	W	14	69.3	54	W	9
11:37 A	2175	42.5	..	W	12	70.0	54	W	9
1902. Aug. 7.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
11:47 A	2365	41.2	..	W	12	70.0	54	W	8
11:54 A	2395	40.8	..	W	12	70.5	53	W	8
11:59 A	2497	38.9	..	W	11	70.7	54	WNW	8
0:33 P	2567	39.4	..	W	12	70.9	55	WNW	9
1:06 P	2175	42.0	..	W	12	71.9	52	WNW	7
1:13 P	2550	40.0	..	W	12	72.7	52	WNW	8
1:49 P	2626	38.7	..	W	10	72.7	48	W	9
2:36 P	3203	32.6	..	W	16	71.9	50	W	9
3:07 P	3392	32.4	..	W	19	72.2	45	W	11
3:17 P	3467	31.3	..	W	17	72.3	44	W	10
3:45 P	3212	33.0	..	W	17	72.2	47	W	9
3:59 P	2912	36.8	..	W	16	71.0	48	W	11
4:03 P	2683	37.1	..	W	13	70.5	49	W	10
4:16 P	2575	38.0	..	W	14	71.1	47	W	9
4:26 P	2256	38.8	..	WNW	13	71.0	47	W	11
4:29 P	2463	38.8	..	WNW	12	70.9	47	W	11
4:46 P	2104	38.8	..	WNW	12	70.5	47	W	11
4:58 P	1908	41.8	..	WNW	14	70.1	49	W	10
5:08 P	1566	46.7	..	..	13	69.8	49	W	9
5:20 P	1229	50.8	..	W	14	69.3	49	W	9
5:35 P	842	56.9	..	W	13	69.0	50	W	10
5:46 P	553	61.3	..	W	12	68.3	51	W	9
6:06 P	540	61.1	..	W	12	67.3	53	W	7
6:06 P	195	67.3	53	W	7	..	..	..	..
6:06 P	78	69.4	49	..	3	..	..	..	..
6:06 P	15	70.7	..	..	..	..	..	..	..
Sept. 4.									
10:15 A	15	75.4	77	..	5	..	..	..	..
10:15 A	78	74.3	..	..	..	..	..	..	..
10:15 A	195	72.7	82	SW	8	..	..	..	..
10:15 A	271	70.9	86	SSW	9	72.7	82	SW	8
10:20 A	389	67.6	91	SSW	11	72.7	82	SW	8
10:27 A	619	64.0	97	SW	12	73.4	81	SW	8
10:35 A	871	61.0	99	SW	13	73.8	80	SW	7
10:37 A	935	62.5	83	SW	14	73.9	80	SW	7
10:50 A	1274	59.5	75	SW	13	74.3	80	SW	8
11:35 A	1294	57.9	87	..	13	74.2	79	SW	9
0:02 P	1746	54.0	78	SW	10	74.8	79	SSW	8
0:13 P	2174	50.7	73	WSW	18	76.8	71	SSW	9
0:21 P	2465	47.7	70	WSW	18	76.8	71	SSW	8
0:55 P	2358	50.3	82	WSW	17	75.9	72	SSW	8
1:10 P	2680	45.4	89	WSW	20	75.0	71	SW	9
1:18 P	2762	43.9	90	WSW	20	74.3	75	SW	8
1:30 P	2958	42.4	85	..	20	73.2	80	SSW	7
1:37 P	3078	41.0	83	..	20	73.0	81	SSW	7
1:50 P	3202	39.7	82	..	21	72.6	82	SSW	7
1:58 P	2972	41.7	100	..	20	72.2	84	SSW	7

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1902. Sept. 4.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*
2:03 P	2364	45.9	100	. .	17	71.0	92	SSW	7
2:16 P	2611	45.0	100	WSW	20	70.4	93	SSW	7
2:42 P	2218	48.3	63	WSW	17	71.2	90	SSW	8
2:48 P	2128	49.1	69	WSW	17	71.2	90	SSW	8
2:55 P	1720	53.7	69	WSW	16	71.3	90	SSW	8
3:22 P	1499	57.2	82	WSW	17	71.5	89	SW	9
3:35 P	1143	59.2	92	WSW	18	71.8	87	SW	9
3:40 P	971	59.9	99	WSW	20	71.8	88	WSW	10
3:41 P	1077	57.5	100	WSW	21	69.8	88	WSW	10
3:42 P	944	59.7	100	WSW	18	69.5	88	WSW	9
3:52 P	654	64.2	74	W	13	69.5	74	W	9
4:02 P	872	67.4	72	W	10	69.4	75	W	7
4:04 P	370	66.7	79	W	10	69.3	76	W	8
4:04 P	195	69.3	76	W	8	. .	. .	. .	. .
4:04 P	78	71.3	. .	. .	. .	. .	. .	. .	. .
4:04 P	15	70.8	75	. .	2	. .	. .	. .	. .
Oct. 4.									
8:21 A	15	56.8	61	. .	. .	. .	. .	. .	. .
8:21 A	78	54.8	. .	. .	. .	. .	. .	. .	. .
8:21 A	195	53.5	68	NNW	5	. .	. .	. .	. .
8:21 A	333	50.7	64	N	7	53.5	68	NNW	5
8:33 A	640	46.7	67	NNE	8	53.6	66	NNW	5
8:45 A	719	46.1	64	NNE	7	53.9	63	NNW	7
9:04 A	754	45.9	66	NNE	7	54.8	62	NNW	5
9:21 A	586	48.4	68	NNE	6	56.5	62	N	4
9:46 A	492	51.0	66	NNE	5	56.8	62	N	4
9:46 A	195	56.8	62	N	4	. .	. .	. .	. .
9:46 A	78	56.9	. .	. .	. .	. .	. .	. .	. .
9:46 A	15	59.9	56	. .	. .	. .	. .	. .	. .
Nov. 6.									
2:20 P	15	59.0	88	. .	. .	. .	. .	. .	. .
2:20 P	78	58.0	. .	. .	. .	. .	. .	. .	. .
2:20 P	195	55.3	96	S	9	. .	. .	. .	. .
2:20 P	490	52.3	100	SSW	18	55.3	96	S	9
2:21 P	573	51.5	100	. .	18	55.3	96	S	9
2.23 P	768	54.2	100	SW	18	55.3	96	S	9
2:31 P	922	54.1	100	SW	17	55.2	97	S	8
2:38 P	1159	52.0	100	SW	16	55.3	97	S	9

Date and Hour.	At Different Heights.					On Blue Hill, 195 m.			
	Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1902. Nov. 6.		°F.	*p. ct.*		*m.p.s.*	°F	*p. ct.*		*m.p.s.*
2:42 P	1360	50.3	100	SW	17	55.4	97	S	9
2:46 P	1360	50.8	99	. .	16	55.4	96	S	9
3:02 P	1642	48.7	97	SW	18	55.3	96	S	9
3:08 P	1628	48.9	94	SW	17	55.1	97	S	9
3:20 P	1584	49.8	89	. .	16	55.1	97	S	9
3:45 P	1417	52.5	83	SW	16	55.2	98	S	9
3:53 P	1265	53.0	92	SW	17	55.2	99	S	9
4:03 P	1207	53.5	97	. .	. .	55.3	99	S	9
4:18 P	964	55.3	89	SW	. .	55.3	100	S	9
4:30 P	651	55.4	100	SW	16	55 6	100	S	8
4:38 P	543	55.7	100	SSW	15	55.6	100	S	9
4:40 P	397	56.3	100	S	. .	55.5	100	S	9
4:40 P	195	55.5	100	S	9	. .	. .	. .	. .
4:40 P	78	58.5	. .	. .	. .	. .	. .	. .	. .
4:40 P	15	58.6	96	. .	. .	. .	. .	. .	. .
Dec. 4.									
0:36 P	15	43.2	47	. .	4	. .	. .	. .	. .
0:36 P	78	40.9	. .	. .	. .	. .	. .	. .	. .
0:36 P	195	39.3	51	WNW	6	. .	. .	. .	. .
0:36 P	392	35.6	54	. .	6	39.3	51	WNW	6
0:44 P	527	33.6	57	WNW	. .	39.3	51	WNW	8
0:51 P	578	32.5	60	WNW	7	39.3	51	WNW	7
1:08 P	713	30.9	64	. .	7	39.4	51	WNW	7
1:23 P	985	27.3	71	WNW	8	39.4	50	WNW	7
1:30 P	612	32.3	65	WNW	. .	39.4	50	WNW	6
2:08 P	1085	28.9	57	NW	. .	39.1	49	NW	6
2:17 P	892	29.6	60	WNW	5	39.1	49	NW	6
2:41 P	810	30.5	57	WNW	6	38.8	50	NW	5
2:57 P	1082	29.2	54	NW	5	38.3	50	NNW	5
3:10 P	953	29.1	. .	NW	5	38.0	50	NNW	4
3:13 P	655	32.7	57	NW	5	38.1	50	NNW	4
3:20 P	464	33.6	61	NW	. .	38.0	50	NNW	5
3:24 P	318	35.7	58	NW	. .	37.7	51	NNW	5
3:28 P	363	35.1	57	NW	. .	37.7	51	NNW	5
3:28 P	195	37.7	51	NNW	5	. .	. .	. .	. .
3:28 P	78	38.9	. .	. .	. .	. .	. .	. .	. .
3:28 P	15	40.7	49	. .	2	. .	. .	. .	. .

REMARKS.

THE weather conditions on the days of the kite-flights may be found in the daily observations in these Annals, Vols. XLII and XLIII. Below are given the kind and amount of cloud prevailing during the kite-flights and the latitude and longitude in degrees of the nearest maximum or minimum of pressure as shown by the charts of the United States Weather Bureau and Hydrographic Office. Both maximum and minimum are given when nearly equally distant. The longitudes are from Greenwich. The positions are approximate, and by interpolation are made to correspond as closely as possible with the time of the maximum height of the kite.

1897.

March 6. Sky covered with a sheet of AS. Minimum in the vicinity of Newfoundland (50 N, 55 W)? ——— March 13. Sky clear except a trace of CS. Minimum 48 N, 60 W. Maximum 48 N, 83 W. ——— March 16. Sky cloudless. Maximum 46 N, 82 W. ——— March 23. Sky clear except for a few CS and CCu increasing toward evening. Minima 38 N, 86 W, and 46 N, 64 W. ——— March 31. C 1. Maximum 49 N, 81 W.

April 6. Sky about half covered with SCu and CuN. Minimum 47 N, 68 W. ——— April 11. Sky covered with low SCu clearing away during the flight. Maximum 43 N, 82 W, moving south. ——— April 13. Sky partially covered with CS and AS. Maximum 44 N, 63 W. ——— April 16. Sky clear except for a few C. Minima 43 N, 83 W and 47 N, 64 W. ——— April 21. Sky cloudless. Maximum 36 N, 74 W.

May 1. N 10. Minimum 37 N, 80 W. Maximum 47 N, 67 W.

June 26. Cu 4, decreasing in amount and changing to ACu. Maximum 44 N, 84 W. ——— June 28. Few C. Maximum 39 N, 74 W.

July 23. At the beginning of the flight there were low FrS, a middle level of ACu and some CS at a high level. The lower clouds quickly disappeared, but the CS increased in extent and density and became AS by 5 P.M. Rain followed on the early morning of the 24th. Minimum 47 N, 76 W. ——— July 26. ACu 8 to 9, above which were CS increasing in amount. Minimum 42 N, 81 W. Maximum 48 N, 64 W.

Aug. 5. Sky covered with N which began to break about noon and show a complex cloud sheet of C, AS, and SCu. Minimum (secondary) 38 N, 71 W. ——— Aug. 17. Cu 9 at 3 P.M., clearing away entirely by 9 P.M. Maximum 37 N, 83 W. ——— Aug. 27. FrCu 4 and C 5 at the beginning of the flight. These decreased and disappeared so that the sky was cloudless by 8 P.M. Minimum 48 N, 76 W.

Sept. 5. Sky cloudless. Maximum 38 N, 76 W. ——— Sept. 6. Few C. Maximum 38 N, 78 W. ——— Sept. 7. CS 1 to 3. Maximum 46 N, 70 W. ——— Sept. 8. ACu 4 from 11 A.M. to 2 P.M. At 2 P.M. low SCu began to drift in and soon covered the sky with a uniform sheet. Maximum 37 N, 72 W. ——— Sept 8–9. Dense fog during the night, but cleared away between 6 and 7 A.M., leaving the sky cloudless. Maximum 35 N, 77 W. ——— Sept. 10. C 3 to 5. Minimum 46 N, 61 W. Maximum 37 N, 82 W. ——— Sept. 11. CuN 8. Maximum 55 N, 82 W. ——— Sept. 19. Few FrCu and ACu, but sky nearly clear. Minimum 48 N, 72 W. ——— Sept. 28. Sky clear except one or two FrCu. Maximum 43 N, 80 W.

Oct. 9. A few FrCu from 10 A.M. to 1 P.M. and a few C from 4 P.M. to 9 P.M., otherwise clear. Minimum 48 N, 62 W. ——— Oct. 15. Sky clear except for a few C. Maximum 36 N, 78 W.

Nov. 10. C 1, decreasing in amount and disappearing by 7 P.M. Minimum 48 N, 57 W.

Dec. 9. ACu 6 to 10. Maximum 46 N, 61 W. Minimum 47 N, 87 W.

1898.

April 26. SCu 8 diminishing to 3 by the end of the flight. Maximum 47 N, 83 W. Minimum 32 N, 83 W.

May 5. Dense AS 7 to 10. Rain began at 6.44 P.M. Minimum 36 N, 82 W. ——— May 9. CS 3 to 5. Minimum 38 N, 64 W. ——— May 17. CuN 8 at the beginning of the flight. These quickly disappeared, leaving a high sheet of CS. Minimum 47, 67 W. Maximum 42 N, 81 W. ——— May 19. CS 3 to 7. Minimum 47 N, 82 W. ——— May 23. Festoon AS or SCu 9. Minimum 48 N, 82 W. Maximum 48 N, 55 W. ——— May 26. Dense fog and steady light rain. Minimum 36 N, 71 W. ——— May 27. Dense fog. Minimum 41 N, 68 W. ——— May 31. SCu 8. Maximum 43 N, 81 W.

June 2. N 10. Occasional light rain. Minimum 38 N, 72 W. ——— June 8. C and CS increasing from 2 to 8. Maximum 36 N, 71 W. Minimum 47 N, 76 W. ——— June 18. C and CS increasing from 3 to 7. Maximum 42 N, 68 W. ——— June 20. FrCu and SCu 4 to 7, and a sheet of C increasing in quantity. Minimum 46 N, 59 W. Maximum 38 N, 87 W. ——— June 24. AS changing through ACu to CCu and CS and diminishing in quantity from 9 to 5. Maximum 33 N, 77 W.

July 16. Sky clear except for a few C. Maximum 47 N, 82 W. —— July 22. Cu 5 at the beginning of the flight; CCu and CS 2 to 4 from 4 P.M. to 8 P.M. Maximum 48 N, 68 W. —— July 23. Clear except for a few C and fog over the lowlands. About 7 A.M. began clouding over with SCu. Maximum 47 N, 64 W. —— July 29. C and CuN 1 to 2. Minimum 48 N, 73 W.

Aug. 3. CS 7 to 9. After 8 P.M. S 10. Minimum 47 N, 69 W. —— Aug. 5. Cu 5 at 3 P.M. diminishing in amount and disappearing by 7 P.M. Maximum 38 N, 81 W. —— Aug. 6. CS decreasing from 5 to 2. Maximum 36 N, 78 W. —— Aug. 25. Cu and CuN 4 to 7. Minimum 46 N, 73 W. —— Aug. 26. CS and FrCu 2 to 7. Minimum 48 N, 68 W. —— Aug. 31. AS and ACu diminishing from 9 to 3. Maximum 33 N, 73 W (?).

Sept. 10. CS and SCu 9. Maximum 48 N, 82 W. —— Sept. 11. Clear except for a few C. Maximum 43 N, 88 W. —— Sept. 21. Cu and SCu 2 to 4. Maximum 42 N, 73 W. —— Sept. 22. CS increasing from 8 to 10. Maximum 37 N, 68 W. —— Sept. 23. ACu and N 3 to 10. Minimum 44 N, 78 W. —— Sept. 24. N 10 with light rain. Minimum 41 N, 66 W. —— Sept. 30. Cloudless. Maximum 38 N, 73 W.

Oct. 31. SCu changing to ACu and diminishing from 8 to 3. Maximum 37 N, 86 W.

Nov. 7. Cu 7 decreasing and disappearing by 6 P.M., leaving the sky cloudless. Maximum 36 N, 79 W. —— Nov. 8. CS 3 to 8. Maximum 37 N, 75 W. —— Nov. 24. N 10 with light rain and fog. Minimum 71 N, 42 W. —— Nov. 25. FrCu 1 at 2 P.M., disappearing by 4 P.M., leaving the sky cloudless. Maximum 36 N, 79 W.

1899.

Jan. 11. Sky clear, excepting a few C. Maximum 47 N, 77 W.

Feb. 23. 2 P.M. CS and FrCu 3, decreasing in amount and disappearing by 7 P.M. Minimum 48 N, 63 W. Maximum 42 N, 85 W. —— Feb. 24. CS 3 to 7. Maximum 47 N, 83 W. —— Feb. 25. Sky cloudless, excepting a few C. Maximum 47 N, 78 W. —— Feb. 27. N 10 changing to AS which rapidly decreased in amount. Minimum 48 N, 72 W. —— Feb. 28. CS increasing from 1 to 10 and changing to AS. Minimum 47 N, 74 W.

March 28. N 10 with sleet and light rain. Minimum 42 N, 79 W. Maximum 44 N, 63 W.

April 28. Clear, excepting a few C. Maximum 41 N, 71 W. —— April 29. C 1. Maximum 38 N, 73 W. —— April 30. SCu changing to ACu which diminished rapidly in amount and disappeared by noon. Maximum 37 N, 73 W.

May 22. CCu 7 changing to ACu. Maximum 49 N, 86 W. —— May 23. CS and CCu 2. Maximum 46 N, 83 W. —— May 24–25. Cloudless. Maximum 39 N, 72 W. —— May 25. FrCu 1 disappearing by 7 P.M., leaving the sky cloudless. Maximum 38 N, 72 W. —— May 26. Cu and CS 3 to 6. Maximum 34 N, 78 W. —— May 26–27. Cloudless. Maximum 31 N, 79 W. —— May 27, 5 P.M. CS 4 increasing in amount and Cu 4 diminishing. The Cu disappeared by evening, but the CS developed into a sheet of AS which covered the sky during the night. Minimum 43 N, 89 W.

June 14. Cu 5, followed by a thunderstorm at 4.35 P.M. Minimum 44 N, 86 W. —— June 20. FrCu and AS increasing in amount, and followed by CuN and a thundershower at 6.38 P.M. Minimum 47 N, 75 W. —— June 21. Record lost. Kite entered cloud at a height of 2270 metres.

Aug. 28. S 10 followed by light rain beginning at 5.15 P.M. Maximum 48 N, 62 W.

Sept. 4. Clear, except a few FrCu and some C appearing about 5 P.M. Maximum 46 N, 78 W. —— Sept. 5. CS and AS 9 disappearing during the evening. Minimum 47 N, 77 W. Maximum 42 N, 64 W. —— Sept. 6. Cu 1 to 8. Minimum 43 N, 63 W.

Oct. 31. N 10 with light rain increasing in intensity. Minimum 36 N, 78 W.

Nov. 2. CS 1 to 3. Maximum 46 N, 81 W.

1900.

Jan. 30. CS 1 to 6. Minimum 48 N, 79 W.

Feb. 6. N 10 with light snow. Minimum (secondary) 46 N, 73 W. —— Feb. 8. N 10, heavy rain. Minimum 48 N, 79 W. —— Feb. 10. CS 10. Maximum 49 N, 74 W.

May 1. Record lost. Kite reached height of 3005 metres.

June 18. CS and SCu 5. Maximum 49 N, 84 W. Minimum 34 N, 73 W. —— June 18–19. CS 3 to 8. Maximum 46 N, 83 W. —— June 19. CS 8. Maximum 43 N, 81 W. Minimum 34 N, 68 W. —— June 21. C 1. Maximum 33 N, 77 W. —— June 22. CuN 5 to 9. Severe thunderstorm, with rain and hail, began at 1.42 P.M., immediately after the landing of the kites. Minimum 44 N, 63 W.

July 17. ACu changing to CCu and diminishing from 8 to 1. Minimum 49 N, 82 W. —— July 18. CCu increasing and followed by CuN, with rain and thunder beginning at 2.26 P.M. Minimum 46 N, 70 W. —— July 19. C 1 to 2. Maximum 43 N, 74 W. —— July 20. ACu decreasing from 9 to 4. Maximum 44 N, 66 W. —— July 21. AS 10 changing to ACu. Also some ACu at a lower level. Minimum 47 N, 71 W. Maxima 42 N, 85 W and 43 N, 60 W.

Aug. 21. FrCu 3, disappearing by 8 P.M., leaving the sky cloudless. Thin S appeared about 9 P.M. Maximum 48 N, 77 W. Minima 34 N, 77 W and 48 N, 58 W; kite-flight in the ridge of high pressure between the minima.

Sept. 18. AS 10 changing to ACu by 2 P.M. and soon disappearing; also SCu reaching a maximum of 7 at 3 P.M. and disappearing by 7 P.M., leaving the sky cloudless. Minimum 43 N, 65 W (Blue Hill was near the centre of the minimum at the beginning of the kite-flight). —— Sept. 19–20. CS increasing from 0 to 7 and developing by the evening of the 20 into a low cloud sheet. Maximum 41 N, 68 W (Blue Hill was near the centre of the maximum at the beginning of the kite-flight). —— Sept. 20. CCu changing to ACu and AS which developed

later into N. Maximum 43 N, 62 W. Minimum 47 N, 87 W. ——— Sept. 21. AS 9 to 10. (Two meteorographs sent up on the kite wire at a considerable distance apart on the 20th and 21st.) Minimum 47 N, 73 W.

Dec. 24. SCu 8 clearing away. Minimum 46 N, 79 W. Maximum 38 N, 61 W. ——— Dec. 27, 2 P.M. to 9 P.M. C 1 disappearing by 9 P.M., leaving the sky cloudless. Maximum 38 N, 77 W. ——— Dec. 28. N with snow. Minimum 44 N, 74 W. ——— Dec. 29. C 1 to 6, disappearing by 7 P.M. Maximum 37 N, 82 W.

1901.

Jan. 28–29. SCu 9 changing to AS and ACu which disappeared about 9 A.M. of the 29th, leaving a few C at a higher level. Minimum 50 N, 68 W.

March 7. FrCu and ACu 4, decreasing to 1, and disappearing by 8 P.M. Maximum 33 N, 78 W. ——— March 22. Cu and SCu 5 to 9. Maximum 33 N, 77 W. Minimum 48 N, 62 W. ——— March 23. C 1 to 2. Maximum 36 N, 73 W. ——— March 25. AS, SCu, C and CS 3 to 7. Maximum 48 N, 68 W. Minimum 43 N, 89 W.

Oct. 22–23. CS and AS 5 to 8. Minimum 50 N, 67 W, moving very slowly toward SE.

Nov. 8. SCu 9 to 10. Minimum 46 N, 64 W. ——— Nov. 9. ACu changing to AS and N, with rain beginning at 4.09 P.M. Minimum (secondary) 46 N, 71 W. ——— Nov. 30. SCu and Cu 9, decreasing and disappearing by 2 P.M. Also a few C. Maximum 38 N, 81 W.

Dec. 5. Cloudless, except a trace of C between 4 and 5 P.M. Maximum 46 N, 78 W.

1902.

Jan. 9. CS 1 to 5. Minima 47 N, 57 W and 46 N, 84 W; kite-flight made in ridge of high pressure between the two minima.

Feb. 5–6. C trace to 3. Some SCu between 4 and 5 P.M. of the 5th. Maximum 38 N, 76 W.

March 5. N 10 with snowfall increasing in intensity throughout the flight. Minimum 38 N, 74 W.

April 3. SCu 7 to 9 between 10 A.M. and 5 P.M., but after that time rapidly decreasing in amount. Minimum 50 N, 62 W. Maximum 32 N, 68 W.

May 1. N 9 with light showers, ending about 1 P.M., after which the clouds changed to SCu and slowly decreased in amount, disappearing during the evening. Two meteorographs on kite line. Minimum 43 N, 68 W.

June 5. Sky cloudless. Maximum 46 N, 76 W.

July 3. Record lost. After the instrument had reached the height of 3564 metres and entered an AS cloud sheet, the kites broke off and drifted into the sea.

Aug. 7. C and Cu 1 to 7. Minimum 49 N, 67 W.

Sept. 4. SCu 9 changing to N and CuN, with light showers between 2 and 4 P.M. Great increase in pull while the kites were in the shower clouds. Minimum 48 N, 73 W.

Oct. 4. C 4. Maximum 44 N, 73 W. ——— Oct. 7. Kites and instrument broke away and drifted to sea after reaching a height of about 5000 metres or higher.

Nov. 6. N 10 with showers. Minimum 47 N, 73 W.

Dec. 4. CS 9 to 10. Minima 46 N, 59 W and 34 N, 85 W; kite-flight made in ridge of high pressure between the two minima. Maximum 48 N, 84 W.

TABLE XIV.

RESULTS FROM THE KITE METEOROGRAPH OVER THE ATLANTIC OCEAN.

Wind directions and velocities are resultants corrected for the motion of the ship.

Place, Date and Hour.	At Different Heights. Metres above Sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Deck of Ship. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1901. Lat. 42° N Lon. 70° W Aug. 22.		°F.	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
10:58 A	54	66.0	71	SSE	5	..	..	SSE	3
11:06 A	208	66.2	60	..	..	66.0	85	..	..
11:20 A	382	67.3	52	..	..	67.0	..	..	..
11:30 A	553	67.5	53	SSE	6	..	80	SSE	6
11:36 A	600	67.6	49	SSE	5	68.0	90	SSE	5
11:51 A	667	67.1	50	SSE	5	..	..	..	..
11:56 A	736	66.6	53	SSE	5	..	..	SSE	4
0:05 P	466	67.8	42	SSE	6	..	..	SSE	4
0:14 P	722	67.1	35	SSE	5	..	..	..	..
0:19 P	545	67.0	39	..	..	..	..	..	..
0:25 P	450	66.2	55	..	..	..	..	..	..
0:29 P	270	66.2	73	..	..	..	..	..	..
0.35 P	186	66.8	68	SSE	4	68.0	..	..	..
0:43 P	41	65.1	90	SSE	4	..	..	SSE	3
1:57 P	48	66.3	91	SE	4	67.0	..	SSE	4
2:03 P	187	67.2	67	..	4	..	..	..	..
2:14 P	403	66.6	50	E	5	..	..	..	..
2:28 P	403	68.0	45	..	..	..	..	..	..
2.45 P	744	67.7	27	ESE	8	..	..	..	..
2:46 P	751	67.7	26	..	8	..	..	..	..
2.59 P	710	67.7	28	..	6	..	..	SE	5
3:22 P	372	69.9	..	..	5	..	..	..	..
3:31 P	190	70.0	62	..	..	..	..	..	..
3:34 P	187	69.1	70	..	..	..	..	..	..
3:44 P	57	68.1	82	..	..	66.8	..	..	..
Lat. 42° N Lon. 68° W Aug. 28.									
4:20 P	9	67.4	82	..	..	67.5	..	..	..
4:40 P	81	64.1	90	..	..	..	..	..	..
4:50 P	150	64.9	56	..	..	..	..	..	..
4:56 P	170	64.7	61	..	..	..	..	..	..
5:10 P	170	64.8	60	..	..	..	..	..	..
5:17 P	94	64.1	87	..	..	..	..	..	..
5:29 P	9	66.8	78	..	..	67.8	..	..	..
Lat. 43° N Lon. 62° W Aug. 29.									
10:50 A	9	70.0	70	..	..	68.0	68	..	..
11:14 A	120	64.8	79	E	2	..	..	..	..
11:37 A	277	61.7	..	E	2	..	..	..	..
11:42 A	279	61.8	86	E	2	69.5	60	..	..

Place, Date and Hour.	At Different Heights. Metres above sea.	Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.	On Deck of Ship. Air Temperature.	Relative Humidity.	Wind. Dir.	Wind. Vel.
1901. Lat. 43° N Lon. 52° W Aug. 29.		°F	p.ct.		m.p.s.	°F.	p.ct.		m.p.s.
11:57 A	396	60.2	88	ESE	4	..	..	..	..
11:58 A	417	61.5	47	SE	4	..	..	..	..
0:05 P	400	60.2	68	SE	4	..	..	..	..
0:26 P	241	61.4	82	E	1	..	..	..	..
0:58 P	100	64.8	76	E	4	..	..	..	..
1:20 P	7	68.1	64	E	2	68.0	62	..	..
Lat. 44° N Lon. 54° W Aug. 30.									
10:47 A	6	65.5	68	..	..	65.5	60	..	..
11:14 A	129	62.3	69	SSE	3	..	..	SSE	3
11:34 A	139	61.5	71	SSE	3	..	..	..	..
11:49 A	362	58.7	74	S	2	..	..	..	..
0:09 P	486	56.7	79	SSW	1	..	..	..	..
0:17 P	525	55.8	81	SW	1	..	..	..	..
0:28 P	495	56.0	81	SW	1	..	..	..	..
0:33 P	533	55.2	83	WSW	1	..	..	..	..
0:35 P	613	54.1	85	WSW	1	..	..	..	..
0:37 P	591	54.7	84	WSW	1	..	..	..	..
0:46 P	311	57.6	81	S	2	..	..	..	..
1:09 P	152	60.2	72	SSE	3	..	..	..	..
1:26 P	6	66.1	59	..	..	66.0	65	..	..
Lat. 47° N Lon. 48° W Aug. 31.									
2:52 P	6	65.7	92	..	..	65.5	88	..	..
3:10 P	26	64.7	90	S	4	..	..	..	..
3:18 P	23	64.0	90	S	4	..	..	..	..
3:30 P	18	63.8	90	S	4	..	..	..	..
3:45 P	20	62.9	90	SSW	4	..	..	..	..
3:50 P	18	63.0	89	SSW	4	..	..	..	..
4:09 P	143	64.7	58	SSW	4	..	..	..	..
4:38 P	113	64.5	60	SSW	4	..	..	S	4
4:55 P	117	64.0	62	SW	4	..	..	..	..
5:18 P	123	63.9	60	SW	5	..	..	..	..
5:43 P	136	64.6	56	SW	5	..	..	..	..
5:56 P	136	64.6	56	SSW	5	..	..	..	..
5:58 P	137	64.6	..	SSW	5	..	..	..	..
6:00 P	98	64.2	80	SSW	5	..	..	..	..
6:02 P	36	60.7	82	SSW	4	..	..	..	..
6:11 P	6	59.0	97	..	..	59.0	95	..	..

Place, Date and Hour.	At Different Heights.					On Deck of Ship.			
	Metres above sea.	Air Temperature.	Relative Humidity.	Wind.		Air Temperature.	Relative Humidity.	Wind.	
				Dir.	Vel.			Dir.	Vel.
1901. Lat. 50° N Lon. 27° W Sept. 2.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*
4:05 P	37	61.4	92	S	6	61.3	92	S	6
4:26 P	200	59.1	96	S	5	..	..	..	..
4:37 P	203	59.0	93	SSW	4	..	..	..	..
4:45 P	228	58.4	95	SSW	..	..	..	..	..
4:50 P	271	57.4	98	SSW	6	..	..	..	..
1901. Lat. 50° N Lon. 27° W Sept. 2.		°F.	*p. ct.*		*m.p.s.*	°F.	*p. ct.*		*m.p.s.*
5:02 P	296	57.1	95	SSW	3	..	..	..	..
5:33 P	196	57.9	88	calm	..	..	..	..	..
5:51 P	33	59.7	80	S	5	..	..	..	..
5:58 P	6	61.0	80	..	..	61.2	80	..	..

REMARKS.

1901.

Aug. 22. Kite-flight made from the deck of a tug-boat in Massachusetts Bay. Boat moving in varying directions with velocities varying from 0 to 4 m. p. s. Two flights were made, one in the morning and another in the afternoon. Sky partly covered with low ACu during flight. Maximum 47 N, 63 W. ——— Aug. 28. Flight from the deck of ocean steamer "Commonwealth" going N 84 E (true), 8 m. p. s. (15 knots). Barometer 767 m.m. Water temperature 68°. Light C about 2 all day. This and the subsequent flights in August were made within an area of high pressure moving from Newfoundland toward the Azores. ——— Aug. 29. Steamer going N 84 E, 8 m. p. s. Barometer 765 m.m. Water temperature 69°. C 2 and some FrCu in SE. In coming down, the cord on the kites was found to be damp. ——— Aug. 30. Steamer going N 78° E, 8 m. p. s. Barometer 764 mm. Water temperature 68°. ACu or SCu 8 at the beginning of the flight. Clear at end of flight. ——— Aug. 31. Steamer going N 67° E, 8 m. p. s. Barometer 766 mm. Water temperatures, 10 A.M., 60°; 4 P.M., 61°; 8 P.M., 56°. Air temperatures, 10 A.M., 59°.5; 2:45 P.M., 65°.5; 6:05 P.M., 59°.0; 8 P.M., 58°. At 10 A.M., foggy with rain; 4:34 P.M., low SCu 5 moving from N, low scud (FrCu or FrN), also fog in W.; 5:56 P.M., light fog; 8 P.M., C from E, some fog.

Sept. 2. Steamer going N 85 E, 8 m.p.s. Barometer 761 mm. Water temperature 63°. 4:03 P.M. fair; 4:30 P.M. SCu 8; 4:50 P.M. S. 10; 8 P.M. SCu from SE. Minimum 43 N, 17 W.

N. B. The following symbols describe the different cloud forms: C=cirrus, C Cu=cirro-cumulus, A Cu=alto-cumulus, A S=alto-stratus, Cu=cumulus, S Cu=strato-cumulus, Fr Cu=fracto-cumulus, Cu N=cumulo-nimbus, N=nimbus, Fr N=fracto-nimbus, S=stratus, Fr S=fracto-stratus. Numerals following the symbols indicate amounts of cloud on a scale of 0 to 10.

APPENDIX D.

KITES AND INSTRUMENTS EMPLOYED IN THE EXPLORATION OF THE AIR, AT BLUE HILL OBSERVATORY, 1897 TO 1902.

By S. P. Fergusson.

Introduction.

An account of the exploration of the air by means of kites at Blue Hill Observatory in 1894, 1895, and 1896 appeared as Appendix B, in the Annals of the Astronomical Observatory of Harvard College, Vol. XLII, Part I. A further account, chiefly a description of the apparatus employed in 1897 and 1898, appeared as an article in the Scientific American Supplement for March 3, 1899, and later was reprinted as Bulletin No. 3, 1899. The meteorological results have been discussed by Mr. Clayton in Vol. XLII, Appendix B, of the Annals of the Astronomical Observatory of Harvard College, and in Bulletins of Blue Hill Observatory, No. 2, 1898, and No. 1, 1900. The present paper describes the progress of the work since 1898.

The work has been under the general direction of Mr. Rotch; Mr. Clayton has conducted the experiments with kites and the discussion of the records, Mr. Sweetland has assisted in the kite-flights and the reduction of the records, while the writer has had charge of the instruments and appliances for flying kites. Mr. Otto Knopp, late assistant at the Aeronautical Observatory of the Royal Prussian Meteorological Institute, aided in designing and constructing apparatus from December 30, 1901, to February 23, 1902. The cost of the kites and apparatus from 1897 to 1901 was partly defrayed by grants of money from the Hodgkins Fund held by the Smithsonian Institution. Since 1901, the entire expense of the investigation has been borne by Mr. Rotch.

Kites.

Materials Employed in the Construction of Kites. — For kite frames, spruce wood has been used since the beginning of the work, and, though other materials have been tested, this has proved best. All the wood used is selected with great care, and after the sticks are made, all having knots or other defects are rejected. At least 30 per cent. of the completed sticks are too defective for use, and altogether,

the loss amounts to about 50 per cent. of each lot of timber purchased. From 1897 to 1901, the sticks were furnished by Mr. George A. Young, whose knowledge and skill were of great value. Since 1901 this work and that of constructing the kites has been performed by Burke Brothers of Boston.

The ideal covering for kites should possess great strength, small weight, a smooth surface, and should be so closely woven as to be nearly impervious to air. In the following table are given the widths and relative weights of the different fabrics used in covering kites at Blue Hill: —

TABLE XV.

COVERINGS FOR KITES.

Fabric.	Width of piece. Centimetres.	Weight per square metre. Grammes.
China silk....................	51 to 91	31.2
Pure raw silk................	69	62.4
Silk percaline................	76 to 91	62.4
Ordinary percaline............	76 to 91	70.9
Nainsook, fine	91	62.4
Nainsook, coarse	91	70.9
Balloon fabric, heavy..........	122	130.4
Balloon fabric, light...........	122	70.9

China silk is the lightest and strongest material that has been tried, and was used on all the kites constructed in 1899 and 1900. This fabric is not closely woven, and to render it impervious to air a thin coating of varnish was necessary, the most satisfactory of the varnishes tried being "Pegamoid bright metal protector," which resembles shellac, but is more elastic, is very light, and dries quickly. The effect of all the varnishes is to increase the weight of the cloth from 50 to 100 per cent., also to render it brittle, and, in time, weaken it so that it is easily torn. Silk, when varnished and stretched over the frame of a kite, is almost as easily torn or punctured by sharp objects as paper; and this liability to accident, and the great cost of the silk and varnish led to abandoning it as a kite covering. The same objections apply, in a lesser degree, to fine nainsook. The balloon fabrics are closely woven and do not require varnish, but are heavy. Silk percaline is the closest woven of the light cotton cloths, requires no varnish, is very strong, and has a smooth surface. It has proved an excellent material for covering kites, and has been used since 1900.

Construction of Kites.—In Plate I are given details of the large Clayton-Hargrave kite which has been used in nearly all the flights. Plate I, Figure 1, shows the kite in the position of flying, and Figure 4 shows the method of operation of the elastic bridle and the methods of attaching the meteorograph. Plate I, Figures 2 and 3, are cross-sections, respectively, of the smaller and larger sticks, and Plate I, Figures 6, 7, and 8, show Mr. Young's method of joining the sticks. All the vertical and lateral sticks of the kite are of the form shown in Plate I, Figure 2, this form having been found by Mr. Chanute to present less resistance to the wind than others when the round side is placed toward the wind. The sticks are carefully fitted together and coated with glue and then lashed together with strong shoe thread, the strands of which are wound many times around the joint. This joint is very strong, requires less space than a metallic joint, and adds less to the weight of the kite than any other method of joining tried. Plate I, Figures 9, 12, 13, and 14, show the method of constructing the curved surface now forming an essential part of all the kites. A number of blocks of wood, *B*, *B*, of suitable form are firmly secured to the outer edges of the front cell of the kite frame, and to a cross stick, *I*, which prevents lateral distortion of the kite at the side of the cell. The stick, *E*, supports the covering of the kite. A piece of wood veneer (usually spruce) about two millimetres thick (Plate I, Figure 12) is lashed over the front edge, the completed structure appearing as shown in Figure 14. The joints are made up with shoe thread and glue in the same manner as the other joints in the frame. After the wooden frame is completed it is strengthened by means of steel wire guys running diagonally across every open space in the kite. The position of the guys is shown in Plate I, Figure 1. The cloth covering is pasted to the frame and is so attached as to pass above the wires, thus preventing injury to the cloth when it is under pressure. The bridle employed is shown in Plate I, Figures 1 and 4. Three strong cords extend from the lower rear edge of the front cell and, at a distance of about three metres from the cell, are secured to one end of the elastic cord, *F*, the other end of which is lashed to a ring for convenience in attaching a flying line. From this ring extends a fourth cord (usually a fine wire cable) which is secured to a bowsprit, *E*, projecting about two thirds of the width of the cell in front of it. In moderate winds the angle of incidence of the kite is about 15° to 20°, but in strong winds the elastic stretches and allows the kite to become more nearly horizontal, as shown by the dotted figure in Plate I, Figure 4. The bowsprit is necessary in order that the centre of pressure, in strong winds, may change from near the centre of the front cell to a point nearer the front edge of the kite, the change being made automatically by means of the elastic bridle.

Different Patterns of Kites Tried.—With the exception of the Lamson kites and of the experimental forms shown in Plate II, Figures 22 to 25, all the Hargrave kites employed at Blue Hill since 1897 have been of the construction just described. The dimensions and other data are given in the following table. The weight includes that of the bridle and accessories, which amounts to about 0.3 kilogram:

TABLE XVI.

DIMENSIONS AND WEIGHTS OF KITES.

Number of Kite.	Length of Kite.	Width of Kite.	Depth of Cell.	Width of Cell.	Lifting Surface.	Total Weight of Kite.	Weight per square metre of Lifting Surface.
	Metres	*Metres*	*Metres*	*Metres*	*Sq. Metres*	*Kilograms*	*Kilograms*
1	1.62	1.22	0.43	0.43	2.17	1.59	0.850
6	1.83	1.52	0.53	0.51	3.53	1.67	0.500
9	...	...	...	...	3.72	2.69	0.723
14	...	...	...	...	6.60	6.35	0.962
15	2.49	2.01	0.75	0.91	6.32	3.16	0.500
16	2.56	2.44	0.91	0.86	8.43	5.16	0.613
17	1.44	1.53	0.33	0.33	2.02	1.36	0.673
20	2.54	2.13	0.79	0.81	6.88	...	...
21	1.53	1.57	0.43	0.42	2.69	1.64	0.628
22	...	...	...	...	9.00	6.80	0.756

The lifting surface is the total suface minus the side or vertical planes. The dimensions as shown in Plate 1, Figure 1, are measured thus: *A B* is the width and *C D* the length of the kite; *A C* is the depth and *C F* the width of the cell.

All excepting the two Lamson kites, Numbers 14 and 22, are of the Clayton-Hargrave pattern, of which Number 16 was the largest constructed and which, proving too large for convenient handling, was not duplicated. Number 15 was more easily handled, and proved so satisfactory that all the large kites made since 1899 (about fifteen in all) have been of approximately the same dimensions. Curved surfaces, of the construction shown in Plate I, were placed on Number 15 in 1899, which increased its weight to nearly five kilograms; and the fact that all the kites since 1899 have been built with curved surfaces explains the apparently excessive weight of Numbers 17, 20, and 21. The Lamson "aerocurve" kite resembles the Hargrave kite in principle, but in construction is different. Instead of the square box cell of the Hargrave kite there are provided two pairs of curved wings or surfaces, which are stretched, by means of wire in their edges, over struts or ribs extending nearly at right angles from the central truss or spine of the kite. Intermediate

vertical struts held by wire guys insure rigidity in all directions, and stability is obtained by means of three vertical surfaces between the wings at each side of the central truss. Properly speaking, there is no rear cell, this being replaced by a tail or rudder resembling two Eddy kites placed one above the other. Kite Number 14 was provided with two, and kite Number 22 with three, superposed lifting surfaces. Both kites are very efficient and are provided with devices for adjustment in case they fly badly. Number 14 is very stable, but Number 22, being very heavy in front, is liable to fly badly in variable winds. The chief defect of these kites is their excessive weight (respectively, 0.962 and 0.756 kilogram per square metre) which prevents their use except in winds exceeding 7 metres per second. Another fault is their liability, on account of the large number of projecting corners, to catch on the main line, when flown anywhere except at the end of the line.

Many experiments have been made by Mr. Clayton to devise a simple, light, and strong structure, two of which are illustrated in Plate II, Figures 22 to 25. Figure 22 is one of the small folding kites sold in the market under the name of "Blue Hill Naval Kites." By lashing a number of these kites together, as shown in Figure 23, a single kite of considerable surface and lifting power may be made, without increasing the weight per unit of area. The defect of the large kite, however, is that the strains are not equally distributed and it is necessary to strengthen, not only the sticks to which the bridle is secured, but also the diagonal struts within the cells; and, when made sufficiently strong and rigid by the additional sticks and braces, the kite is heavier and less efficient than the structure shown in Plate I, Figure 1.

In Figures 24 and 25, is shown a kite frame without wire guys. It is formed of wooden hoops secured to a light frame work of sticks, the whole making a light, rigid structure. Small kites may be easily and quickly constructed in this manner, but a very serious defect of such a structure is the difficulty in case the hoops are broken of making suitable repairs.

Efficiency of Kites. — Assuming uniform conditions of stability and good construction, the kite that flies at the highest angular altitude above a horizontal plane is the best for reaching great heights. The line required for the purpose of reaching any definite height will be shorter and therefore lighter than that necessary for a kite flying at a lower angle, and, moreover, the kite flying at the highest altitude, having less weight to lift, could be made smaller. Any additional pull desired may be obtained by increasing the lifting surface of the kite. In 1896 Professor Marvin published a method of determining numerically the efficiency of the kite, but this method has been found to be unsatisfactory when applied to flat surfaced kites, and

apparently it fails entirely when applied to kites with curved surfaces and fitted with elastic bridles. The measurement of the angular altitude, as a test of efficiency, has been employed at Blue Hill since the beginning of the work of exploring the air, and has been found quite satisfactory. Each test consists of ten or more measurements of the altitude reached by the kite when flown from a short line, usually less than 100 metres in length. The measurements are made with a transit at regular intervals of a minute or half minute, and at such times as the wind is steady and sufficiently strong to support the kite at its maximum altitude. Kites of the same construction and dimensions usually fly at nearly the same altitude, and it is unnecessary to determine the efficiency of every kite of the same pattern. In the following table are given the mean angular altitudes reached by the different patterns of kites employed at Blue Hill: —

TABLE XVII.

EFFICIENCY OF KITES.

Kite.		Number of Observations.	Mean Altitude. Degrees.	Length of Line. Metres.	Remarks.
Clayton-Hargrave	No. 1	10	52.9	100	Flat lifting surfaces.
do.	No. 6	10	54.7	60	do.
do.	do.	10	53.0	60	do.
do.	No. 9	10	54.3	40	do.
Lamson Aerocurve	No. 14	6	58.5	300	Arched lifting surfaces in front cell. Carrying instrument weighing 1.3 kilograms.
Clayton-Hargrave	No. 15	10	55.0	33	Flat lifting surfaces.
do.	do.	10	56.1	..	do.
do.	No. 16	10	57.2	..	All lifting surfaces curved.
do.	do.	10	60.4	33	do.
do.	No. 17	10	60.4	60	3 rigid curved lifting surfaces.
do.	do.	10	66.3	60	do.
do.	No. 19	10	64.0	..	2 rigid curved lifting surfaces in front cell only.
do.	No. 26	10	58.4	..	1 rigid curved lifting surface in front cell.
do.	No. 27	10	64.1	..	Two curved lifting surfaces.
Nine foot Eddy	No. 8	10	59.1	..	Described in "Exploration of the Air."

The lifting surfaces of kites Numbers 1, 6, 9, and 15 were flat. Those of the Lamson kite, Number 14, were curved approximately as shown in Plate I, Figure 10. The edges were stiffened with wire and the form of the curve was obtained by

tacking the covering over curved wooden ribs. The greatest depth of the curve was about one tenth of the width of the surface, and situated about one third of the width of the surface from its front edge. The surfaces of kite Number 16 were curved in nearly the manner as those of the Lamson kite, but the covering was not made fast to the curved sticks. Both surfaces of the front cell and the lower surface of the rear cell of Number 17 were curved and stiffened as shown in Plate I. When first constructed this kite was rather unstable and did not fly steadily until its length was increased to 1.44 metres, and after this change, its efficiency was smaller. In Number 19 only the surfaces of the front cell were curved, and the efficiency of this kite proved to be greater than that of kites having three or four curved surfaces. Accordingly, flat surfaces were substituted for the curved surfaces in the rear cells of all the kites in use; and, with the exception of kites Numbers 25 and 26, all kites constructed since 1899 have but two curved surfaces. Kites Numbers 25 and 26 had one curved surface (the lower surface of the front cell), but the efficiency was lower than that of kites having both surfaces of the front cell curved. The form of the curve, as shown in Plate I, Figure 9, is the arc of a circle from A to K; the curve then becomes flatter, and just behind the stick, I, it becomes entirely flat, excepting as the covering arched upward more or less by the pressure of the wind. It has been suggested that the covering of the kite when loosely put on forms an automatic efficient curved surface, but observations of such a surface exposed to the wind will show at once that it is really less efficient than a rigid flat surface. The form of curve assumed by a kite covering when under pressure is shown in Plate I, Figure 4. The pressure of the wind is almost at a right angle to the part of the covering between C and D, and serves to increase the drift or horizontal component of the pull and diminish the altitude reached by the kite. The additional resistance of such a loose covering in a kite of the size of Number 15 amounts to 0.7 square metre, and in order to avoid this bagging of the covering it is secured to the sticks as shown in Plate I, Figures 11 and 15. The effect of the wind upon the rigid curved surface is to form, behind the rigid portion of the curve as shown by the arrows, a vortex which tends to propel the kite forward. The power of the vortex increases as the angle of incidence of the kite diminishes, thus giving the greatest efficiency in strong winds when the pressure is greatest upon the sticks and edges of the cells.

Much time has been spent upon devices for correcting or adjusting kites that do not fly well. In ordinary use, the kite is subjected to many variable and excessive strains which in time loosen the guys and bend or warp the frame, such deterioration causing the kite to fly to one side or the other of its normal position, and at a

much lower altitude. One of the devices first used for adjustment consisted of small turn-buckles placed in the guys at the side of the kite and between the cells, by means of which the relative inclination of the two cells could be altered within narrow limits. This method proved satisfactory in one instance but failed in others, and was abandoned. Next, one of the vertical surfaces in the rear cell of a kite was made adjustable so that its angle with the central axis of the kite could be changed like a ship's rudder, and this method proved very effective and certain in its action. Another very efficacious method of correcting a kite is to secure flat strips of wood or cloth over the open end of the rear cell of the kite. These strips by their resistance to the air cause the kite to lean or fly toward the side on which they are secured, and since the strips can be attached or detached quickly, this method is excellent for use in the field where time is valuable. It might be expected that with this additional resistance to the wind in the rear cell, the efficiency of the kite would be lowered, but actual measurements have shown that the kite is not only made steadier but flies at the same or a higher altitude than that attained before attaching the resistance strips.

Summary. — The results of experiments with different forms of kites are: —

The Hargrave kite, as modified by Mr. Clayton and of the construction described in the preceding pages, has been found to be the best for meteorological work. It flies at a mean altitude of 60° to 66°, and is stable in all winds not too strong to wreck it. It will fly in a wind of 5 metres per second, reaches its great efficiency in winds of 8 to 15 metres per second, and when equipped with self-adjusting, elastic bridle will fly safely in winds of 20 metres per second near the ground, and 30 metres per second at heights exceeding 2000 metres. Errors of flight may be corrected by altering the position of the vertical surfaces or by increasing the resistance to the wind of any desired part of the rear cell. The chief objection to this form of kite is its complex structure and consequent great cost (about $40 for the larger sizes).

Devices for Flying Kites.

Lines. — For main line there has been found nothing better than steel music wire. Of most sizes, single pieces 2000 to 3000 metres in length can be obtained, and, by varying the size, many degrees of tensile strength are possible. At the beginning of the experiments with wire as a flying line, at Blue Hill, in 1896, it seemed best to use a small wire since the smaller wires are slightly stronger, weight for weight, than the larger; and with the exception of 2000 metres of Number 11 wire purchased for trial, Number 14 wire alone was employed until February, 1900, when

7000 metres of Number 17 wire were obtained. Tests of the three sizes of wire showed that when the smallest wire was employed, the limit of safe working strain was reached before the angular altitude of the kites became as high as that reached when the largest wire was employed, although the larger wires are appreciably heavier for the same strength than the smaller. To determine, if possible, the size of wire best adapted for use, the tensile strengths and weights of all sizes of music wire larger than Number 9 were obtained from two leading manufacturers, and are given in the accompanying table. The data from the two sources did not agree exactly and the figures in the table are averages.

TABLE XVIII.

DIAMETER, WEIGHT, AND TENSILE STRENGTH OF MUSIC WIRE USEFUL AS KITE LINE.

Music Wire Gauge Number.	Diameter (in Millimetres).	Weight of 1000 Metres (in Kilograms).	Tensile Strength (in Kilograms).
10	.61	2.16	85
11	.66	2.60	97
12	.71	3.08	113
13	.76	3.56	126
14	.81	4.00	140
15	.86	4.52	148
16	.91	5.00	162
17	.97	5.71	178
18	1.02	6.37	189
19	1.07	6.94	203
20	1.12	7.46	223
21	1.17	8.33	236
22	1.22	9.09	256
23	1.29	10.00	281
24	1.40	11.48	311
25	1.50	13.51	350
26	1.60	15.63	402
27	1.70	17.54	450
28	1.80	20.00	533
29	1.88	22.22	590
30	1.98	24.39	657

A careful examination of all the data shows that the cause of the greater efficiency of the larger wires is that, relative to weight, they present less surface to the wind than do the smaller; and that, instead of an insignificant effect, as some have supposed, the pressure of the wind upon the wire is a most important one.

The surface of a Number 17 wire presented to the wind is nearly one square metre for each thousand metres of length; and since, in very high flights 8000 to 14,000 metres of wire are in the air, the total pressure of the wind upon the line must be very great, and its tendency is always to drive the line and kites to a lower altitude.

Wind pressures of 30 to 50 kilograms per square metre of surface exposed normally to the wind are not uncommon, and it appears that the line presenting the smallest surface, relative to weight, is the one best to employ. Considering the wire alone, there is an advantage in using the largest size of wire, but there appears to be a practical limit to the number of kites that may be efficiently employed on one line. At Blue Hill, at present, the average number of kites employed at one time is five, having a total lifting surface of about 32 square metres. Since it is not desirable to increase the size of the kites, the increased power required to lift a larger wire must be derived from a number of the largest kites now used; and since more than eight kites can seldom be used to advantage, it appears that a Number 25 or a Number 26 wire will give the best results, until there can be obtained better kites capable of lifting a larger wire.

It is also probable that a line made up of several different sizes of wire may be more efficient than one of uniform size. Such a line made up of cords was used by Mr. William A. Eddy in 1891, and was recommended by him and by Professor Harrington, then Chief of the Weather Bureau, at the Chicago Conference on Aerial Navigation in 1893; also a similar line was in use at Blue Hill during 1894 and 1895. M. Teisserenc de Bort claims to be the first to employ steel wire in this manner, in 1898. The line employed at Blue Hill since 1900 is approximately as follows:—

TABLE XIX.

ELEMENTS OF THE KITE LINE.

Music Wire Gauge Number.	Length. Metres.	Tensile Strength. Kilograms.	Safe Working Strain. Kilograms.
13	2000	126	70
15	2500	148	85
17	3000	178	100
20	2000	225	120
23	2000	281	160

Total length 11,500 metres.

The strength of the wire is very uniform, and lengths of 1500 metres, in two or three instances, have been subjected to strains up to the breaking limit deter-

mined for short pieces, before they gave way. In practice, it is unsafe to work at a strain exceeding one half or two thirds the breaking strain, for the reason that diving kites or a large number of kites suddenly exposed to a strong wind sometimes unexpectedly increase the total strain to a dangerous degree.

It appears to be almost impossible to obtain a line of great length in one piece, especially one tapering from a small size at the outer end to a relatively large size at the reel, although this would be very desirable because of the difficulty of making a strong, durable splice. In making up long lines, splices are necessary at least once in each 3000 metres, and the experience at Blue Hill is that the splices are always a source of weakness. Nearly all breakages of the lines have occurred in or at splices, despite the care taken in forming them; and many have broken at a strain much lower than that withstood safely only a few days before. The splice employed from 1896 to 1902 is a modification of the Sigsbee splice, and was fully described in the "Exploration of the Air by means of Kites," referred to on page 215. Newly made splices are always stronger than single wires and the breaks always occur at the end of the tapered or finished part of the splice. It is probable that this weakening of the wire just outside the splice is due to one or more of the following causes:—

(1) Corrosion by free acid not burned out when the splice is soldered.

(2) Annealing of the wire by overheated solder.

(3) Abrasion of the wires when a taper is formed at the end of the splice.

It appears probable that most of the breaks were due to the first of the above causes, for the reason that it is very difficult to remove the excess of acid used in soldering unless the heat of the solder is so great as to impair the strength of the wire. In 1901 it was decided to use no solder near the ends of the splices, which were made longer, but in other respects in the same manner as before. In January 1902, Mr. Knopp made an important improvement in the splice, which is shown in Plate I, Figures 16 and 17. The ends of the wires, instead of being filed, are annealed for a distance of ten to fifteen centimetres and hammered flat, after which operation the splice is formed in the usual way. The ribbon-like ends of the wire can be brought into much closer contact with the parts about which they are wrapped than is possible with wires flattened by filing, and can be prepared in much less time. Mr. Knopp's splice was intended to be complete without solder, and several splices made of Number 20 wire did not pull apart in the testing machine; but, during a flight, a splice made in a smaller wire pulled apart while under a very moderate strain, this indicating, that while such a splice is safe under a steady strain, it gradually works loose under the variable pull experienced during a flight.

Such a splice when made in zinc-covered wire, like that used in Germany, is sufficiently strong, but when made in the polished wire in use at Blue Hill, some method of binding is necessary to prevent slipping. The plan in use at present, and which appears to be very satisfactory, is to solder a length of about 20 centimetres in the middle of a splice 1.5 metres long. The strain comes upon the wires equally at this point, and the effects of soldering are not so injurious; also, instead of acid, there is used a soldering paste containing ingredients which neutralize any free acid not burned out by the solder. No splices made in this manner have shown any sign of weakness, and the two breaks in the line which occurred during 1902 were at a considerable distance from any splice.

The wire can be obtained in the United States in lengths of 3000 metres or less, at a cost of one dollar a kilogram.

For secondary lines the larger sizes of blocking cord were employed between 1894 and 1899, but the durability of this cord proving to be less than that required, an attempt was made to employ single strands of music wire for the purpose. It was almost impossible to prevent kinking and breaks in the wire when short lengths were used, and, after losing several kites which were flown on short single wires, this kind of secondary line was abandoned and replaced by a steel wire cable already in use at the Aeronautical Observatory in Berlin, and made by Felten and Guilleaume of Germany. The following are the elements of the two kinds of cable obtained: —

	Diameter. Millimetres.	Weight per 100 metres. Kilograms.	Tensile strength. Kilograms.	Cost per Kilogram.
Soft steel wire cable with flax centre	2.0	1.0	150 to 160	$4.19
Music wire cable, solid	1.3	0.3	150	$2.12

These cables, while rather small for convenient handling, are much stronger than cords of the same weight, are easily repaired or attached to clamps, etc., by tying, and appear to be as durable as the main line.

Clamps for Use in Tandem Flying. — The clamp devised by the writer in 1896 and described in the account of the "Exploration of the Air" already referred to, is still in use and is satisfactory, although some time is required for attaching and detaching it. Since January, 1902, a clasp devised by Mr. Knopp and already used in Germany has been employed with success. It is illustrated in Plate II, Figures 29 and 30. Upon a plate of aluminium, *A*, are mounted two circular arcs, *B,B*, so shaped that at their outer edges a wedge-shaped groove is formed between them and the plate, *A*, and into which groove fits the main kite line, *D*. When in position, the pull of a secondary kite attached by means of the

cord, *C*, bends the main line, *D*, more or less, and the friction of the groove is ordinarily sufficient to prevent the clasp from slipping; also, two steady pins, *F*,*F*, held in position by the spring, *E*, prevent the clasp from falling off the line in case the pull of the secondary kite should become irregular or cease entirely. This clasp can be attached and detached instantly, and is very satisfactory when there is a steady pull on both main and secondary lines, but is liable to slip on smooth wire when the strains are variable. To prevent slipping, a spring-clamp, *G*, hinged at *I*, and held in position by the thumbscrew, *H*, has been successfully used on some of the Knopp clasps. This clamp may be swung to one side when the clasp is being attached to the main line, and a slight pressure only is sufficient to prevent slipping. The different positions of this attachment are shown by dotted lines. The cord *C*, is attached to a ring in the bridle of the kite by means of an aluminium toggle.

Another form of this clasp, called a universal clasp, devised by Mr. Knopp for the purpose of relieving the main line of excessive strains, is shown in Plate II, Figures 18 to 21. The main line, *W*, after being placed in the usual clamp-grooves, bears against a grooved block, *B*, on the end of the spring, *C*. Excessive strain on the line depresses the block and spring, allowing another spring, *D*, to release the hook, *E*, to which is secured the line from a secondary kite. To prevent loss of the kite a second line is attached to the ring, *F*, and to the bowsprit only, of the kite, the pull of which then becomes much smaller than when the flying line is attached to the bridle. Two of these clasps proved very satisfactory when tried in the testing-machine, the release of the hook, *E*, occurring at nearly the same strain in several successive tests. With additional devices to prevent slipping, when the main line is slack, this clasp will be very useful during light winds, for it will then be possible to employ a large total lifting surface without the usual danger of breaking the line in the event of a sudden increase of wind.

The "S" hook, or "devil-claw," shown in Plate II, Figures 27 and 28, has been employed by Mr. Knopp for attaching the kites to the end of the main line, and is very useful when this operation must be performed quickly.

Testing Machine.—This machine, shown in Plate II, Figure 26, was constructed by Mr. Knopp for the purpose of testing the clasps, and samples of wire or cord. On a heavy wooden beam, *A*, are secured a strong spring scale, *B*, and a winding device, consisting of the four arms, *C*,*C*,*C*,*C*, mounted on a strong pivot and provided with a rachet and pawl. Around the hub of the rachet is wound a flexible steel band, *D*, having at its free end the clutch, *E*. A similar clutch, *F*, is secured to the spring scale, *B*. The principle of this form of clutch is nearly

the same as that of the clasps shown in Plate II, Figure 29. The specimen of wire to be tested is placed in a set of curved grooves of constantly decreasing radius, the smallest of which are in pins, 4 millimetres in diameter, about which the end of the wire is twisted. Specimens held in this clutch are not in the least injured by it, and can be attached or detached very quickly. The specimen, in position, is tested by turning the winch, *C,C,C,C*, in the direction shown by the arrow, the strain being indicated by a sliding index, *G*, which is left at the position of maximum strain reached on the scale. The ratchet is useful if it is desired to hold the specimen under strain for a considerable time.

Windlass.—The first steam-power windlass employed in kite flying was constructed in February, 1897. A hardwood drum contained the wire, which, when wound in, was distributed over the drum by means of a device resembling the feed mechanism of a lathe, and there were provided devices for registering the length of line employed, and the pull exerted by the kites. The power was derived from a Shipman automatic steam-engine of two horse-power. In May 1897, the windlass was rebuilt on the principle of the Thomson deep-sea sounding machine. The wooden drum, having been crushed under the accumulated strain of the wire, was replaced by one of cast iron, a strain pulley was employed to relieve the drum of the cumulative pressure of the wire, and automatic devices for storing the wire and recording the pull thereon, were provided. This windlass was generally satisfactory, and was employed until August, 1901, when it was again rebuilt on a larger scale, with the addition of an automatic brake and devices for preventing the wire from leaving the drums. Details of this windlass are shown in Plate II, Figure 31, and in Plate III, Figures 32, 33, and 34.

The mechanisms are mounted on a heavy frame, *A*, which is bolted to the platform, *B*. A wooden house or shed, *C*, mounted on rollers, protects the parts from the weather, as shown by the dotted lines, and may be moved from over the windlass, during a flight, leaving every part easily accessible. The wire employed for the main line is stored upon the drum, *D*, and, as it is wound in from the kites, it passes first over the pulley, *E*, which actuates a dial registering the length of line drawn out by the kites. From this pulley the line (indicated by *W*) passes over the two dynamograph pulleys, *F* and *G*, to the strain pulley, *H*, around which it passes four times, leaving which it passes over the guide pulleys, *I* and *J*, to the storage drum, *D*. The pulley, *J*, is moved slowly backward and forward along its shaft by means of the cam, *K*, and distributes the line uniformly over the face of the storage drum. The cam, *K*, is driven by gearing connected with the axis of the storage drum, which is driven by means of a round belt, *L*, extending from a

pulley on the countershaft, *N*, which also, by means of spur gearing, drives the strain pulley. The pinion, *O*, slides upon a pin clutch and may be moved in or out of mesh with the large gear on the axis of the strain pulley. Self-adjusting rolls, *P, P*, held against the faces of the strain and guide pulleys by means of springs and supported by the four-armed frames, *R,R,R*, prevent the line from jumping out of the grooves in these pulleys in case it becomes slack between the storage drum and strain pulley. This device was modeled after a nearly similar one in use for several years at the Aeronautical Observatory in Berlin.

The automatic brake is shown in detail in Plate II, Figure 31. A wire rope, *U*, fitted to a groove in one flange of the storage drum, *D*, is, by means of the spring, *T*, flexibly connected with the axis of the brake lever, *V*, which is rigidly connected with a strap brake acting on the wheel, *S*, on the axis of the strain pulley. When the strain is light the brake pressure on the storage drum exerted by a slight movement of the lever, *V*, and spring, *T*, is sufficient, but when the strain increases, additional pressure upon the lever, *V*, brings into action the strap brake acting on the pulley, *S*, which receives the excess of strain; and there being pressure on the storage drum at all times, the line never becomes slack between the storage drum and strain pulley when the line is being drawn out. The brake is so adjusted that, when the windlass is at rest, both rope and strap bear very lightly, the weight of the strap being sustained at *X*, and that of the rope at *Y*. The resulting friction, therefore, is small, since motion of the wheels in the directions shown by the arrows tends to open the brake and diminish the area of contact. If, while winding in the line, the connection with the engine is broken or other accident occurs so that the line begins to run out rapidly, the added friction disturbs the balance of the brake which immediately sets itself, thereby preventing an excessive rate of speed, as shown in Plate III, Figures 32 and 33. The countershaft, *N*, is connected with the engine by means of the belt, *M*. By changing this belt from one set of pulleys to the other, the speed of winding may be changed from 1.1 to 2.2 metres a second, with the engine running at a maximum speed of 400 revolutions a minute; and by means of the throttle valve the speed may be further reduced to about 0.2 metre a second. By means of the cranks, *C,C*, the line may be wound in by hand if desired. The cranks are secured by means of pin clutches, and can be attached or detached instantly.

The dynamograph, shown in detail in Plate III, Figure 34, records the strain on the line whether the line is stationary or in motion. Between the strain pulley, *H*, and the guide pulley, *F*, is placed the pulley, *G*, which, by means of the bent lever, *a*, and spring, *b*, bends the line from a straight line between *F* and *H*.

Increasing the strain straightens the line, the motions of which are recorded on the drum, *e*, by means of a pen secured to the end of the lever, *a*.

The engine is provided with devices for automatic control of the fuel and water feeds, and in winter the exhaust steam is utilized to heat the feed water tank to prevent freezing. About four litres of kerosene oil, costing about three cents a litre, are burned in one hour.

While very satisfactory, the engine is not sufficiently powerful to wind in the line faster than 2.2 metres a second when the strain is greater than 60 kilograms; and since speeds exceeding 5 metres a second are often desirable when the wind is light, an engine of eight to ten horse-power would be much better. An electric motor is the best source of power, as it is always ready for use and can be regulated as easily as a steam-engine. If steam-power must be used, an engine without dead points will be found more easily manageable than the ordinary engine with a single cylinder.

The power windlass just described was built one part at a time during intervals between the regular kite-flights, additions or changes being made as they seemed necessary; therefore it is difficult to estimate the cost. Probably the entire windlass, including engine, could be duplicated for about $1,000. Although the windlass has worked satisfactorily, an experienced engineer is necessary to manage it properly. The chief and almost the only source of trouble encountered is the liability of the line to become slack between the storage drum and strain pulley. When this occurs the line is easily kinked and sometimes thrown off the pulleys, despite the protecting rolls, thus causing vexatious delays, and loss of kites and apparatus. The storage drum, with 12,000 metres of line, weighs 120 kilograms, and, since the line must be wound under a light strain, the driving belt, *L*, is not sufficiently heavy to move the drum when the engine is started, and it has been found necessary to start the drum by hand at the same time the engine is started. Further experiment may develop a windlass of this pattern without this defect, but it now seems probable that a simple windlass, provided with one large drum of perhaps 1.5 metres diameter and 0.5 metre width of face, upon which the line could be wound under full strain, would be more satisfactory. There being no strain pulley or guide pulleys necessary, except for the dynamograph and for a swivel to allow the line to adapt itself to any direction followed by the kites, such a machine could easily be managed by an inexperienced person. Some injury to the wire may result from winding it under high tension, but since the elastic limit of the steel is very little below the ultimate tensile strength, it seems unlikely that any serious defect would develop.

Meteorographs.

In 1894, when the work of exploring the air with kites was begun, there were no self-recording meteorological instruments suitable for such use, and the instruments employed in that year and until March 1896, were roughly constructed combinations of the ordinary Richard barograph and thermograph and an anemometer, designed by the writer. In 1896, Richard's baro-thermo-hygrograph, previously constructed for use with balloons, but now built of aluminium and weighing but 1.3 kilograms, was used for the first time. As constructed, the instrument was ill-adapted for use with kites, the device for attaching it to the kite being unsuitable, and the thermometric tube wholly unprotected against insolation. After much experiment, Mr. Clayton constructed satisfactory screens for the thermometer, and, though the suspension devices continued to give trouble, the records obtained were excellent. The first four-element meteorograph employed in the work of exploring the air was constructed in February 1897, although one was designed by the writer in 1894. The anemometer projected below the instrument and was so easily damaged while in this position that in February 1898, a new instrument was constructed with the anemometer exposed above the front end. This is shown in Plate III, Figures 35 and 36. The device for suspending the instrument was pivoted at *B*, and by means of the double rudder, *A*, the instrument was kept approximately level even when swung backward by the wind. The continuous swinging of the instrument on its pivot so disturbed the recording pens that the records made were blurred and frequently illegible, and in a modified instrument, shown in Plate III, Figure 37, the pivots of the support were placed at right angles to those of the recording pens, but the effects of the swinging were more marked than before. In January 1899, an anemometer with horizontal axis was attached to a Richard meteorograph which was suspended as shown in Plate III, Figures 38 and 39. For this pattern of anemometer only horizontal alignment is necessary and accordingly a single rudder, *A*, was employed. The suspension was composed of four cords extending from the corners of the instrument to a ring, *B*, to which was secured the supporting cord leading from the kite. The effect of a variable wind upon an instrument exposed in this manner is to swing it backward and forward as shown in Plate I, Figure 4. There are no centres of oscillation in or near the instrument and, consequently, there is less vibration of the pens. The records from this instrument were clear and sharp, but the supports for the anemometer cups were not very rigid, and could not be made so without considerably increasing the weight of the instrument, which already amounted to 1.68 kilograms.

The chief defects of the improved Richard meteorograph, described above, were:

(1) Inconvenient arrangement of parts, it being necessary to remove the outer case and thermometer screens in order to change the record sheet or adjust the mechanisms.

(2) Large size, the case of the instrument being square and presenting a surface of about 350 square centimetres to the wind, the pressure of which tended to lower the altitude of the kite.

(3) The mechanisms were unprotected from moisture, the outer case being a frame covered with coarse wire gauze which was effective only in preventing injury to the parts in case of accident to the instrument.

After much study and experiment, the pattern of meteorograph shown in Plate IV, was constructed during the spring of 1899, and instruments of this pattern have proved very satisfactory. The mechanisms are of the Richard pattern but the details of construction differ from those of the Richard meteorograph.

The base plate, *A*, is of sheet aluminium, 1.2 millimetres thick, the edges of which are turned up on all sides in the form of an unbroken band, 12 millimetres high, in order to secure great rigidity. The case, *B*, is of sheet aluminium, 0.25 millimetre thick, and is secured to the base plate, *A*, by means of screws, these two parts together forming a rigid box weighing but 0.283 kilogram. The shape of the case was made nearly like that of the kite sticks shown in Plate I, Figure 3, in order that the resistance to the wind might be as small as possible. A sliding door secured by means of a spring latch, gives ready access to the recording mechanisms, and the record cylinder, *D*, is easily removable through a circular opening in the top of the case. This opening is closed by a loose disk, *E*, of sheet aluminium, held in position by the large thumbscrew, *F*, on the axis of the cylinder and by steady-pins, *G*, *G*, which fit into holes in the top of the case. By this means the top of the cylinder is held rigidly in position at each end and steadiness of action is secured. A rib secured across the base plate prevents springing of the plate by the weight of the cylinder.

The record cylinder is formed of sheet aluminium, but 0.3 millimetre thick, by the process known as spinning. It being impossible, however, to make a tube exactly cylindrical by spinning, the cylinders, after being roughly formed, are hammered on a mandrel to make them of uniform diameter throughout. The heads of the cylinder, also, are spun of aluminium, 1.0 millimetre thick, and are rivetted in position, the metal being entirely too thin for screws to hold well. The complete cylinder weighs but 0.141 kilogram without the clock movement, and 0.280 kilogram

with it and, although very light, has been found amply strong for all ordinary purposes.

The spring clamp employed in the Richard instruments to secure the record sheet to the cylinder is liable to displacement by shocks and was improved by the addition of a small thumbscrew, *I*, which holds it firmly to the cylinder. When it is desired to expose the instrument longer than twelve hours the record sheet is pasted to the cylinder to form a continuous surface for the pens.

The recording mechanisms are mounted upon the figure-four frame, *J*, each of the two sides of which is formed from one piece of sheet metal, 1.8 millimetres thick, stiffened by a rib, *K*. The four upright parts are bent at right angles at their bottom ends for convenience in mounting on the base plate to which they are attached by means of screws. The frame is thereby supported at widely separated places near the edges of the base plate, the whole forming a structure that is very light and at the same time extremely strong and rigid in all directions.

In the upper ends of the frame just described are two holes into which fits the tube, *L*, carrying the anemometer cups and spindle. A set-screw, *M*, holds the tube in place, and the case, *B*, through which the tube passes, affords additional support. After the set-screw, *M*, is loosened and the gear, *N*, raised, the tube and spindle may easily be withdrawn for inspection without disturbing other parts of the instrument. The anemometer cups are 30 millimetres in diameter and are mounted on arms of 55 millimetres radius so that one rotation of the cup wheel is made during the passage of one metre of wind, assuming that the factor is 2.80. The cups are made of sheet brass 0.15 millimetre thick, instead of aluminium, because of the difficulty experienced in working the latter. The difference in weight of the two metals in such small cups is negligible. The motion of the cups is transmitted through the gear and spindle, *N*, to the disk, *O*, which rotates once while the wind is traveling 3600 metres. The disk is provided with two notches of different depths, and against it rests a pin on the lever, *S*, which is secured to the axis of the pen lever. By means of this mechanism the pen alternately makes a long and short mark on the record sheet and the number of long marks in one hour is equal to the same number of metres the wind travels in a second. The short marks, indicating half-metres, are for convenience in obtaining velocities during light winds when the marks are far apart. During high winds the short marks are so close to the long marks as to form a continuous line and only the long marks are distinguishable. In meteorographs constructed in 1898 the anemometer pen, actuated by a heart cam, moved backward and forward over a space on the record sheet ruled to ten divisions representing metres per second, but this device was not so satisfac-

tory as the one previously described. One defect, however, of the method of recording velocities by means of short marks or dashes, is that when a flight is prolonged until more than one complete rotation of the record cylinder is made, the two records are superimposed and it is almost impossible to distinguish one from the other. Accordingly, in the spring of 1902, the recording mechanism of the anemometer was altered as described hereinafter, so that flights of several days duration could be made without superimposing the records.

The lever, *S*, and the fork, *b*, are rigidly secured to a hollow sleeve fitting loosely on the axis of the pen lever, *e*. In the fork, *b*, rotates an obliquely mounted disk, *i*, which receives its motion from the record cylinder through the medium of the shaft, *c*, and gears, *d* and *g*. Another fork, *h*, secured to the axis of the pen lever rests upon the edge of the disk, *i*, and by it is given reciprocal vertical motion independent of that imparted by the disk, *O*. The spindle, *C*, and gear, *d*, are suspended from the fork, *b*, rising and falling with it and with the pen when the lever, *S*, is actuated by the disk, *O*. As the record cylinder rotates, the pen describes a curved line which alternately rises and falls; and the gears, *g* and *d*, being prime to each other, this line occupies a new position during each successive rotation of the cylinder. Sometimes, when the records are blurred by moisture etc., they are not easily read at points where the lines intersect; but these points are widely separated and this defect is not at all serious. The greater part of the weight of the anemometer cups and spindle is supported by a ball-bearing at the end of the tube (*L*) and the cups will begin to rotate with a wind of one metre per second. The anemometer is calibrated by mounting the meteorograph upon the wind vane to secure proper exposure, and comparing the records with those of the standard anemometer at nearly the same height.

The hygrograph hair is secured between the two brackets, *u*, *u*, which are held rigid by the curved strip of metal, *v*, which also serves to screen the hair from injury. The hairs are securely clamped to the link which is connected with the cams operating the pen-arm. An adjustment is provided at *R*, and there are devices for preventing permanent disarrangement of the cams by shocks.

The thermograph and barograph mechanisms are of the well-known Richard pattern and their arrangement is obvious without a detailed description.

The thermograph tube is insulated from the other metal parts of the instrument by means of the hard rubber block, *y*, and celluloid plate, *x*, which latter covers the entire lower surface of the base plate; also, the tube is shielded from direct sunlight by means of thin strips of celluloid, *z*, *z*, which are secured to the legs of the instrument.

At first, the thermograph tubes were obtained directly from Richard of Paris, but since 1897 most of the tubes employed have been made from steam gauge tubing and filled by a process devised by the writer in 1895. The tube, *A*, (Plate IV, Figure 42), is rigidly clamped in a vise, *C*, which is secured to a board, *B*, provided with a screw, *E*, connected with the outer end of the tube by means of the link, *D*. By means of this screw the tube is straightened to the desired point, which is determined by alternately tightening and loosening the screw, *E*, until a point is reached from which, when released, the tube does not quite return to its original position of rest. Both extreme positions are marked on the board by the lines *F* and *H*. The tube is then filled with alcohol through a small threaded hole at *I*, in the end of the tube, after which a screw, *J*, (Figure 43) the threads of which are partially filled with solder, is driven firmly into the hole. On releasing the screw, *E*, the tubes recurves, but usually stops at the line, *G*. Excellent tubes may be made in this manner in a short time, at small expense, without the aid of a force pump for filling; and the screw-plugs have not given way or leaked in any tubes that have been constructed so far.

The record sheets of the meteorograph just described are ruled for a range of temperature of 80° Fahrenheit and a maximum barometric height of 6000 metres. The space for relative humidity is ruled to each ten per cent, and records varying one per cent are read by estimation. By allowing the records to overlap slightly, heights up to 7000 metres could be recorded without altering the adjustments of the instrument.

The accuracy of this meteorograph is believed to equal that of any other in use and, so far as exposure of the elements is concerned, it is more satisfactory than any others that have been tried at Blue Hill. The anemometer agrees with the standard anemometer within 4 or 5 per cent, as shown by direct comparisons and by measurements of the velocities of clouds through which the instrument passed. The hygrograph is not accurate, and so far, all efforts to make it an instrument of precision have been unsuccessful. It is sensitive and shows the direction of changes in humidity but the errors are too variable to admit of accurate quantitative measurements of humidity. The exposure of the thermograph appears to be as satisfactory as that of instruments exposed in standard shelters on the ground, this having been determined by comparisons in the shade and in full sunlight, and by comparing temperatures made at great heights before and after sunset. The heights shown by the barograph are probably accurate within 5 per cent. The cost of this meteorograph is about $150.

Other Meteorographs.—In 1900 a meteorograph with a very sensitive thermometer was specially constructed for Mr. Rotch by M. Richard. The thermometric portion of the instrument is composed of four strips of German silver, 0.1 millimetre thick and 20 millimetres wide, mounted in a rectangular frame of nickel-steel, the coefficient of expansion of which is very small. The changes in length of the strips caused by variations of temperature are recorded in the usual manner. The device is remarkably sensitive, adapting itself to a change of temperature of 20° Centigrade in a few seconds, but it is insensible to changes of 1° or 2° Centigrade, which defect unfits the instrument for purposes where an accuracy of 0°.5 Centigrade is required. The defect mentioned may be due to friction in the bearings of the strips — there being nine bearings in all — which could be remedied by employing a continuous thermometric strip with a smaller number of bearings, but such an experiment was not tried.

A Marvin meteorograph, kindly loaned for the purpose by the Chief of the Weather Bureau, was employed in the flights made during November and December, 1902. This instrument has been fully described in the publications of the Weather Bureau and details are unnecessary here. The construction of this instrument is excellent in many respects. The thermograph tubes are made of very thin tempered steel and are the most sensitive that have been tried at Blue Hill; and the exposure of the thermograph tubes and hygrograph hair appears to be good, judging from comparisons made at the ground. By making proper adjustment of the recording pens, the instrument may be used to heights of 3500 metres or lower. The temperature scale is wide, but the spaces for pressure and humidity are rather narrow. The instrument is secured within the kite frame between the cells, and the anemometer is exposed on a bowsprit extending in front of the kite, the record being made by means of electricity. The chief defects of this meteorograph are that the ranges of the pens are small, requiring frequent adjustment of the pressure and temperature pens, and that these adjustments cannot be made without removing the case. If a longer cylinder with a wider record sheet was employed and the adjustments were made easily accessible from outside the case, this meteorograph would doubtless be the equal of any at present in use.

Exposure of Meteorographs. — When the meteorograph is suspended by a single line exceeding 5 metres in length, from the point where two kites are secured to the main line, the motions of the two kites modify one another, the instrument is subjected to a minimum of jerking or shaking and the records are smoother than when the instrument is exposed in any other way. The exposure next best for securing steadiness is to suspend the meteorograph from the kite, as shown in

Plate I, Figure 4. In both cases, the position of the instrument relative to the wind is independent of that of the kite and should the latter fly much to one side or the other of the mean direction of the wind, the exposure of the instrument is not affected. But should the kites dive, the meteorograph is subjected to severe jerks and frequently is torn from the supporting cord and lost; so after losing two meteorographs in this way, this method of exposure was abandoned. In November 1899, at the suggestion of Mr. Clayton, the meteorograph was clamped to the main line as shown in Plate I, Figure 4, and while the records made near the ground are, perhaps, not so smooth as when the instrument is suspended directly from the kite, no instruments have as yet been lost. The chief defects of this method of exposure are that, with the clamps now employed, considerable time is required to attach or detach the instrument from the line, and being so near the point of support a very slight jerk or shock is sufficient to turn it completely over, thereby spilling the ink from the pens and increasing the risk of losing the records. The instrument is safe, however, when exposed in this way and the experimenters are now so experienced in the art of handling the kites and apparatus that few records have been lost.

Another method of exposing the anemometer, tried by the writer in the spring of 1900, is shown in Plate I, Figure 5. The meteorograph is secured within the kite in nearly the same manner as the Marvin instrument and the anemometer mechanism is suspended below it at the end of a cable, 15 metres in length. The cable forms a flexible shaft connecting the mechanisms of the anemometer with the recording pen in the meteorograph, the principle being similar to that of the patent log employed on ocean steamers. The device worked satisfactorily when tested by suspending the anemometer from the Observatory tower, but because of a defect in the steel cable employed, the anemometer was lost at the beginning of the only kite flight made with it. Lack of time prevented further experiments, but it is believed that satisfactory results could be obtained from such an instrument if it were properly constructed and exposed.

Methods of Testing Meteorographs. — It has been found necessary from time to time to re-determine the scale values of the elements of the meteorograph especially those for recording temperature and humidity. The range of the thermometer pen is ascertained by selecting a day when the temperature is low and making two series of comparisons with a standard thermometer, one in the shelter in the external air and another in a room in which the temperature is at least 40° or 50° higher. The instruments are ventilated by fanning and every precaution is taken to secure uniform conditions of exposure. The range determined is accurate within 0°.15 in a total range of 50°.

In testing the hygrometer the method employed at present is to compare the instrument with a well ventilated psychrometer on several successive days in order that the comparisons may extend over a wide range of humidity, but this method is not satisfactory for low humidities. An instrument, apparently accurate between 20 and 100 per cent, has been known to record 20 per cent below zero when passing through dry air at a considerable height above the ground, this indicating that the scale of the hair hygrometer may not be uniform at extremely low humidities. The atmospheric ranges of relative humidity at Blue Hill being too small for accurate determinations of the scale values of the meteorograph, a testing machine in which the hygrometers could be compared in air artificially dried, was designed and partly constructed, but beyond a few preliminary experiments no use has yet been made of the apparatus. It consists of an air-tight box large enough to contain the meteorograph, an accurate psychrometer and a small fan for agitating the air within the box. A larger fan outside the box serves to draw a current of air through the box, the air first passing through a tube containing materials for absorbing its moisture. The degree of humidity is regulated by means of suitable valves in the outlet and inlet pipes. It is expected that the hair hygrometers will be made much more accurate with the aid of this apparatus, for it appears that these instruments, as yet, have not been very carefully studied.

The barographs are occasionally compared with a mercurial manometer under an air pump, Professor Cross of the Massachusetts Institute of Technology having kindly permitted the use of the apparatus by the Observatory staff.

Before and after each flight the meteorograph employed is carefully compared with the psychrometer in the standard shelter to determine corrections for the records of temperature and humidity. Previous to 1899 the meteorograph was suspended, for comparisons, in the free air near the shelter and about four metres above the ground, but since 1899 the instruments have been made small enough to be placed within the shelter and very near the standard instruments.

On clear days near noon there are local differences of temperature which impair the accuracy of the comparisons, but in the evening or early morning these differences disappear and comparisons made at such times are not affected.

Instrument for Measuring Altitudes.

Since 1896 all measurements of altitudes and azimuths of the kites when flying have been made by means of a Gurley surveyor's transit fitted with a side telescope for vertical sighting. The telescope magnifies about 20 diameters and the circles can be read to half-minutes, but, in practice, the readings are made only to tenths

of degrees, this having been found sufficiently accurate. The transit is mounted upon a post 20 centimetres square firmly set in the ground about eight metres south of the windlass, this form of mounting being much more rigid and secure than that afforded by the tripod usually employed.

The heights of the kites are determined from observations of altitude and of the length of line between the kites and the windlass by means of the formula:

$$H = (l \sin h) - x.$$

in which H is the linear height in metres, l the length of the line in metres, h the altitude in degrees and tenths, and x a quantity applied as a correction for the sag of the line. This correction was obtained by comparing the heights, determined by means of the formula just mentioned, with heights determined by triangulation from two widely separated stations, the distance between which had been accurately measured. The amount of the correction varies from less than one per cent. at small heights to about five per cent. at the greatest heights reached. The probable error of the corrected heights is less than one per cent.

When the kites are invisible because of darkness or clouds the heights are obtained from the record of height made on the meteorograph sheet.

ERRATUM.

Vol. XLII, Part II, p. 169, April, 1898, maximum temperature, **65** on 30, should be **71** on 17.

END OF VOLUME XLIII.

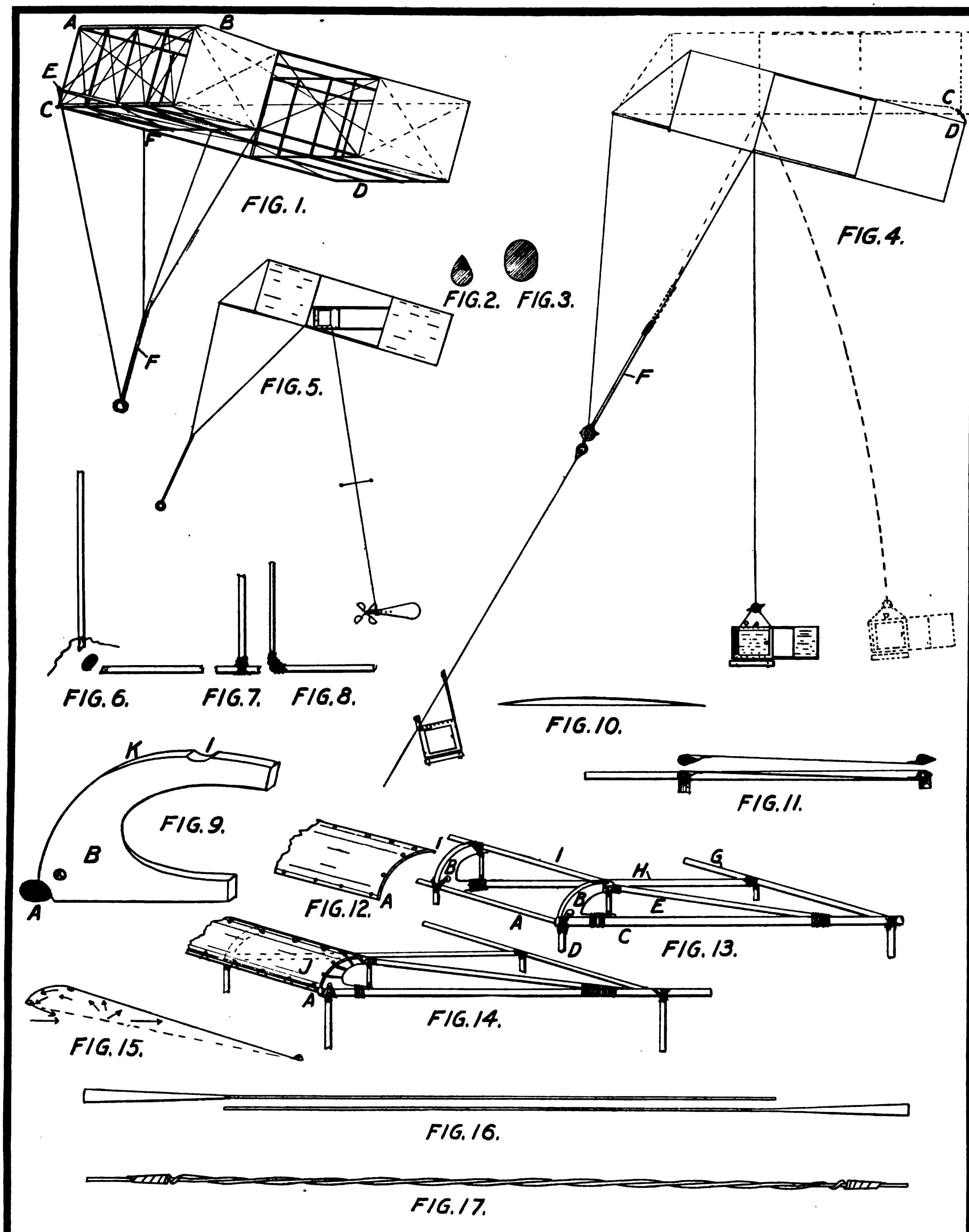


FIG. 1.
FIG. 2.
FIG. 3.
FIG. 4.
FIG. 5.
FIG. 6.
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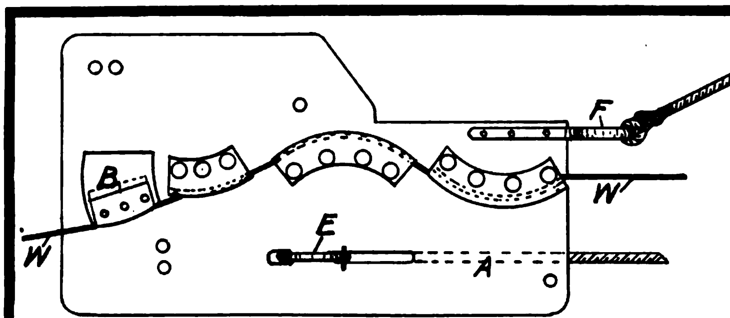
FIG. 17.



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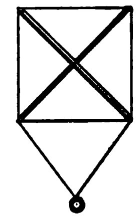
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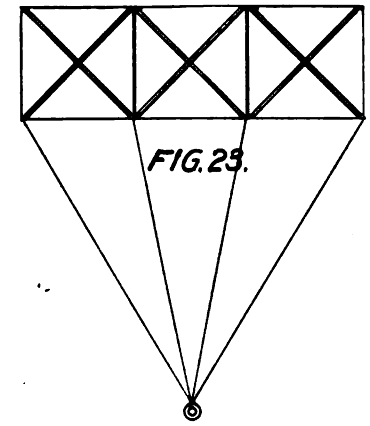
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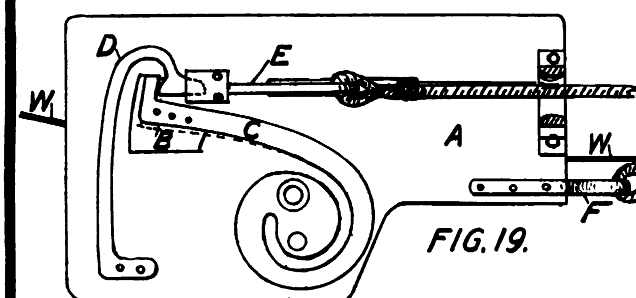

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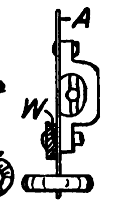

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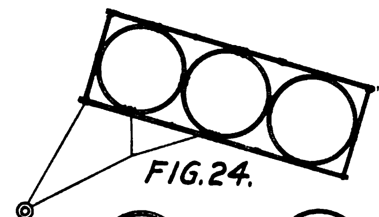
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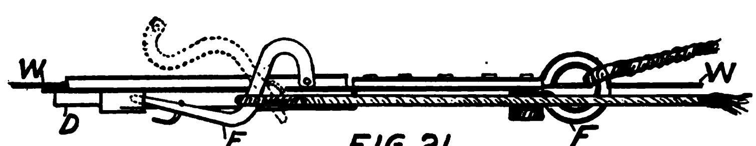

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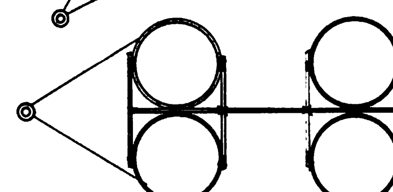
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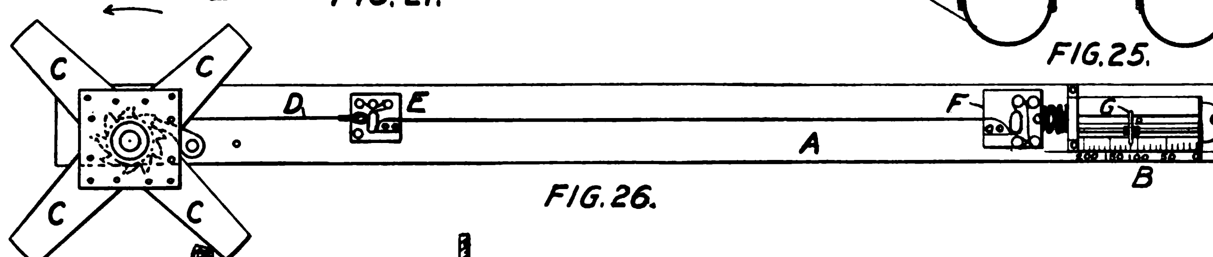

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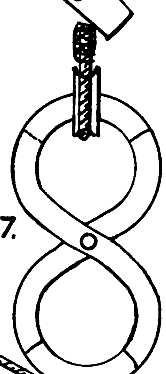
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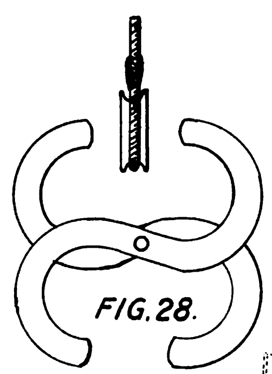
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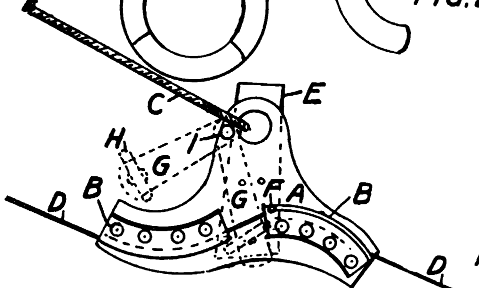

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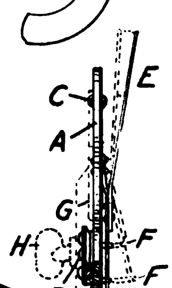

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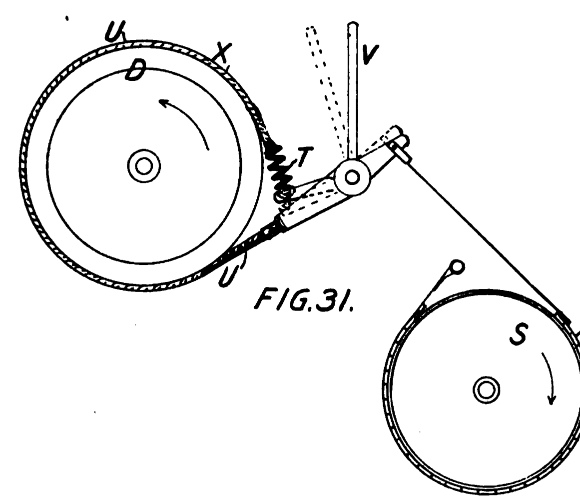

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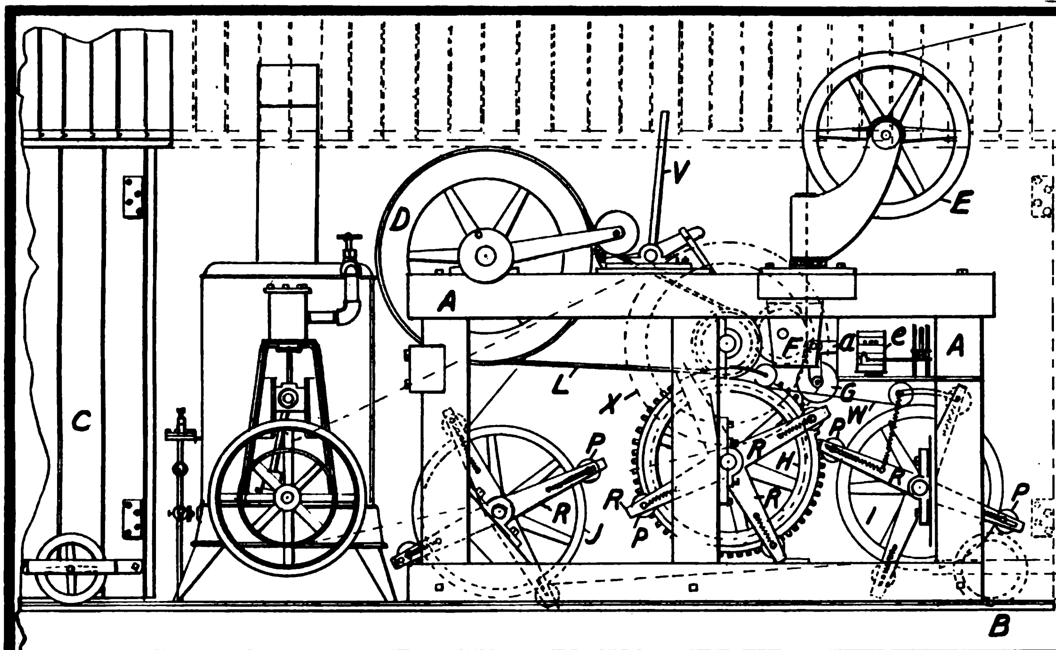

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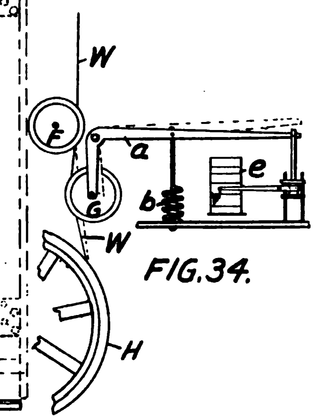

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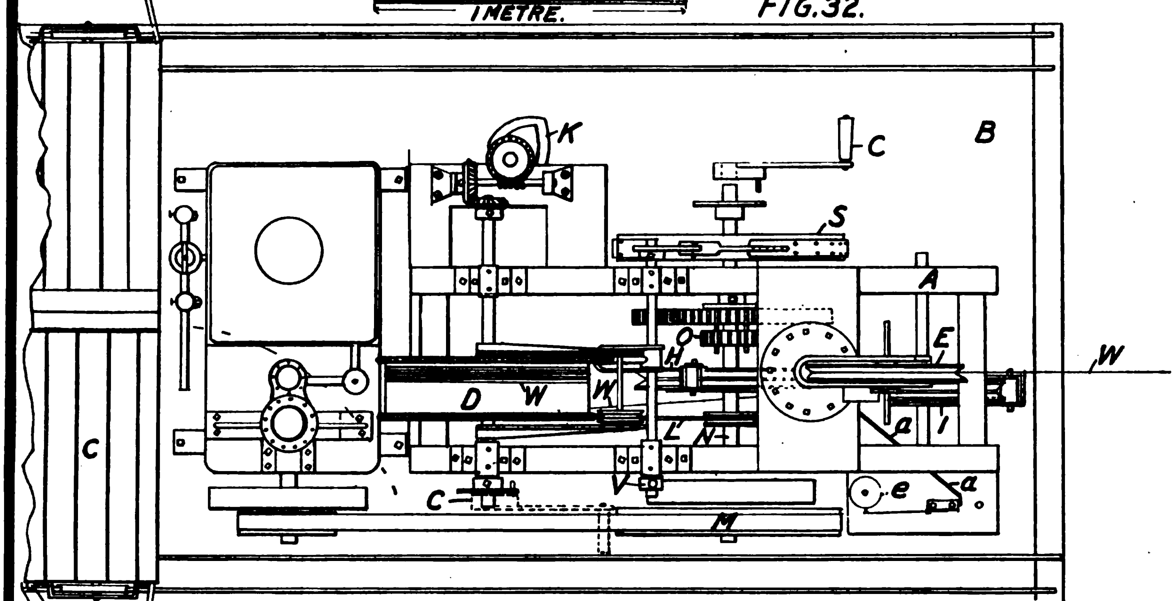


FIG. 33.

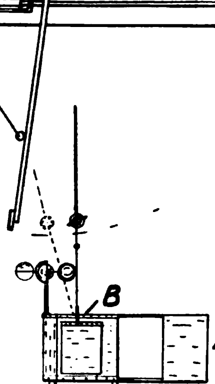


FIG. 35.

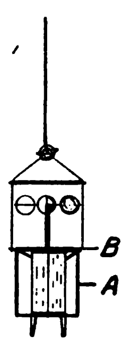
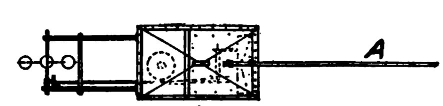


FIG. 36.

FIG. 37.



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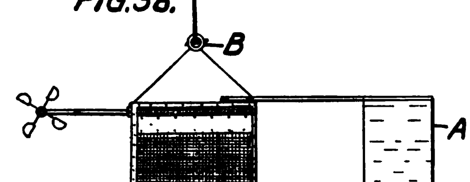


FIG. 39.

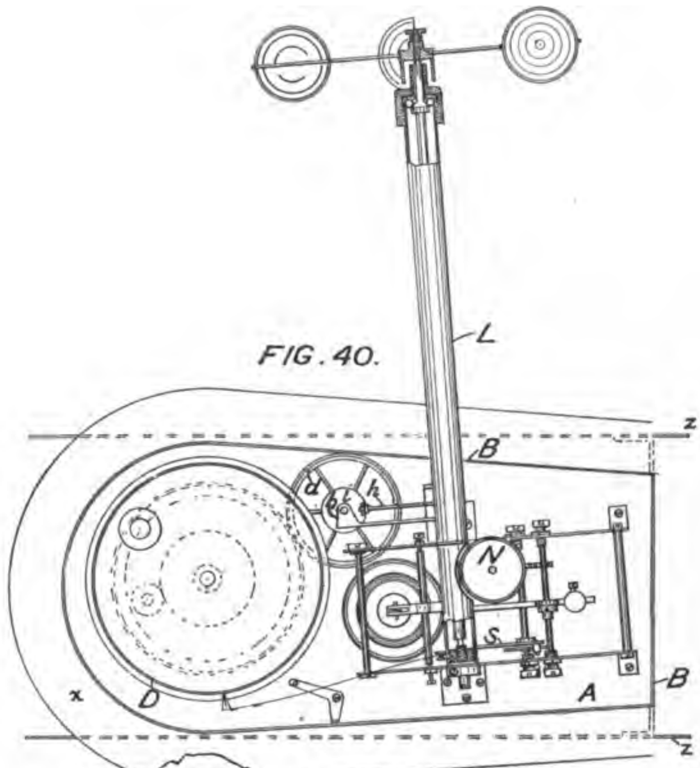


FIG. 40.

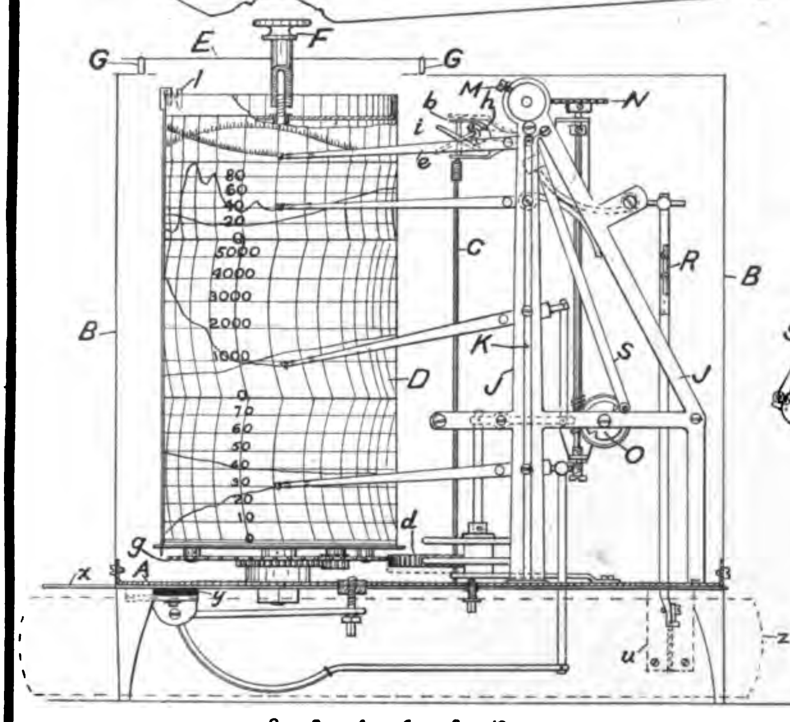
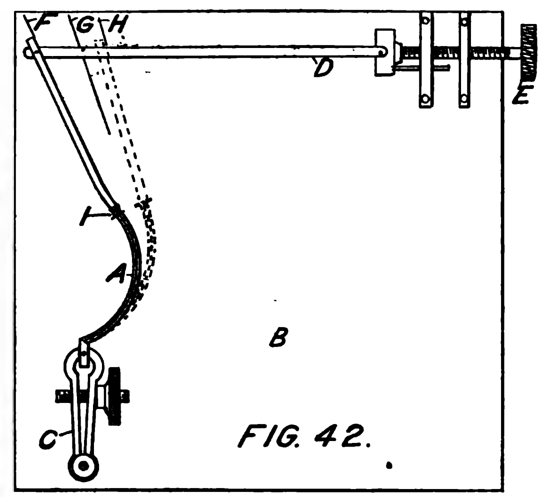


FIG. 41.



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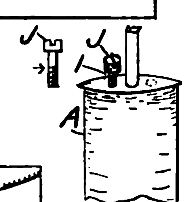

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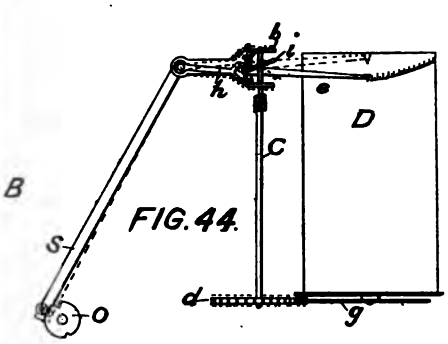
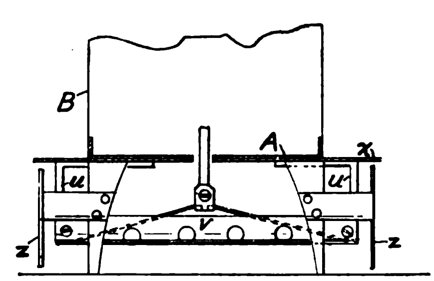


FIG. 44.



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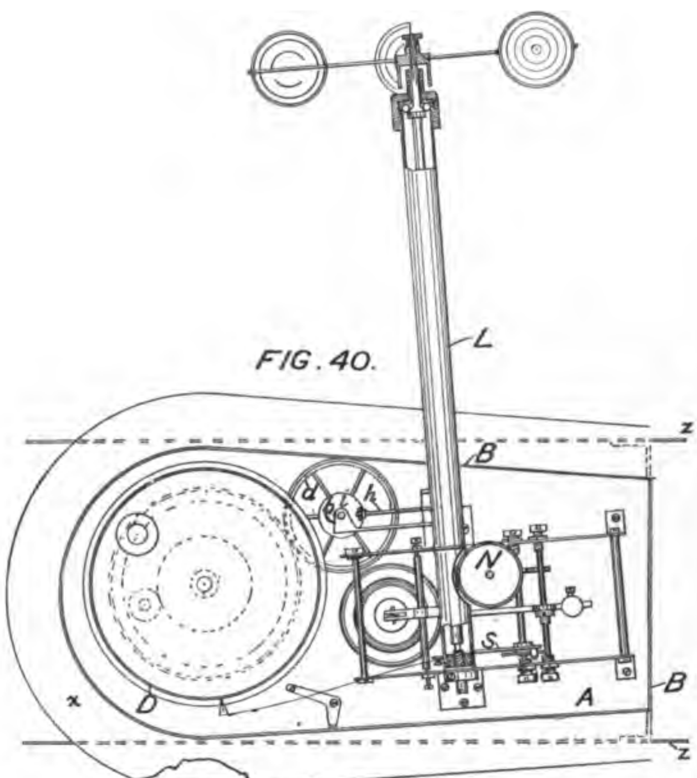

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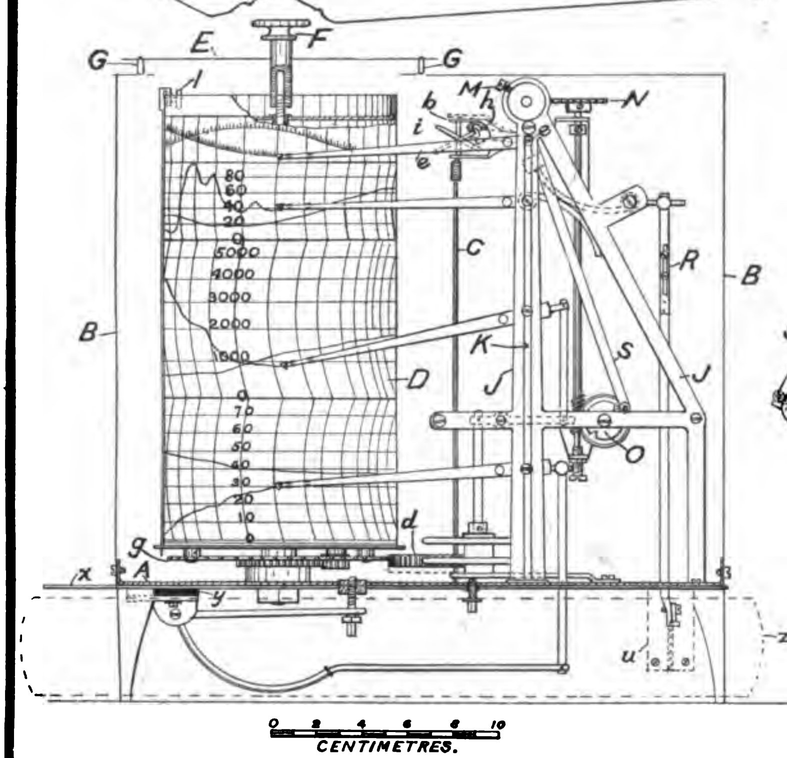

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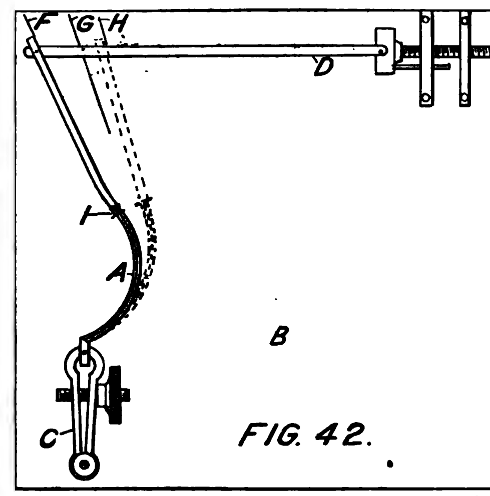

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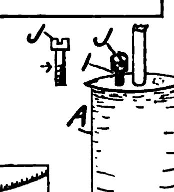

FIG. 43.

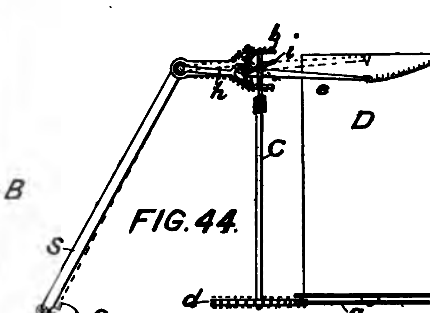

FIG. 44.

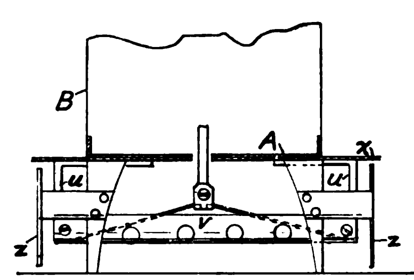

FIG. 45.